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IRON TRADE REVIEW
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Market Shows Mixed Situation

Large Production and Demand Joined with Soft Prices and Weak Confidence—Leading Interests Uphold Present Quotations—Some Capacity Going Out but March Pig Iron Output Shows Further Substantial Increase

ELEMENTS of strength curiously are mingled with those of weakness in the steel market leaving the future outlook more puzzling and uncertain. The strong points come from the continued high rate of production which apparently truly registers the widespread underlying consumption as it is developing from week to week since discounting of future wants is being rigidly avoided by buyers. On the unfavorable side is the absence of comparable backlogs of unshipped business with the producers, necessitating their relying upon the current inflow of tonnage to sustain their operations. This makes for a condition of erratic prices and an absence of firm confidence.

After the high production in March during which the Gary works established a new tonnage record for open-hearth steel, the trend now is slightly lower. Several blast furnaces have been blown out or banked this week in various districts. In the Mahoning valley independent open-hearth operations are under 70 per cent. Floods caused the banking for a few days of a number of blast furnaces in the Pittsburgh and Wheeling districts.

The season's iron ore price still is undetermined. The Ford Motor Co.'s inquiry for 250,000 tons is the only business of sufficient size under negotiation to indicate the market.

Prices Not Reduced

The market has been filled with rumors this week of an impending announcement of price reductions on finished steel by leading producers. This has proved to be unfounded and there are indications that some of the larger interests are not inclined to consider such action at this time because of the steady way in which new tonnage is coming out.

A more pronounced drop in IRON TRADE REVIEW's composite of fourteen leading iron and steel products appears this week when the average is $42.91 against $43.13 last week.

Recent signs have pointed to a softer and more fluctuating price situation within certain limits. This range is well covered by 2.25c to 2.40c Pittsburgh in plates, 2.30c to 2.40c in shapes and bars, 2.85c to 3.00c in blue annealed sheets, 3.70c to 3.85c in black sheets and 4.90c to 5.00c in galvanized sheets. The Ford Motor Co. is credited with buying 15,000 tons of automobile sheets at 5.10c Pittsburgh. Bands have slipped to 2.75c.

Oil Demand Heavy

Oil field demands for steel are coming out again in volume. The 850-mile pipe line of the McCorkle Pipe Line Co. from the Oklahoma fields to the Gulf now is active and calls for 90,000 to 100,000 tons. Included is 25,000 tons for tanks in Texas. Another pipe line order just placed at Pittsburgh for the southwestern fields involves 35,000 tons. Other tank and considerable still work is being negotiated.

The automobile situation presents a mixed front. Various builders, among them the Ford, Buick and certain other companies, have made an appreciable cut in their April production schedules and the effect of this has been felt by certain manufacturers of accessories who are reducing their activities. Some cancellations are reported. On the other hand a considerable group of builders including the Dodge, Studebaker, Willys-Overland and several other plants are maintaining their output.

Railroad buying in equipment is less prominent but is well maintained in miscellaneous fields. Bridge work inquiries and awards are heavier totaling 20,000 tons. The Chesapeake & Ohio is closing this week on 5000 cars for which it will furnish the material, about 50,000 tons. The Southern Pacific wants 140,000 tons of rails.

Iron Total Greater

Pig iron production in March showed another substantial gain and reached a daily average of 110,832 tons compared with 105,937 in February, a rise of 4.6 per cent. The March average represents 89 per cent of the record figure last May. Total production in March was 3,435,813 tons against 3,072,165 tons in February. Active furnaces gained 6, the number at the end of March being 269.

Sellers of pig iron say they have not experienced so stagnant a condition of buying in many years.

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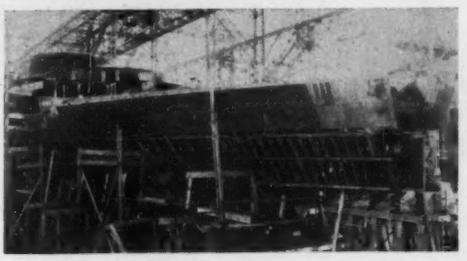
Who Represents You in Europe?

AS you read the European cablegram in Iron Trade Review please bear in mind the fact that it is not the product of a foreign news reporter whose interests are localized and remote from those of the United States. It is a mesasge from an American who knows the world's iron and steel industry, who has had technical training, and who is experienced in the technique of market reporting. It is a message from the European manager of Iron Trade Review, who devotes all his time to the study of international trade conditions, and who has practically unlimited resources at his command to serve our readers. This publication first realized the need for, and began a cabled news service from Europe, years ago—a service commensurate with the needs, the size and importance of the American industry. Iron Trade Review has been pleased to identify for you on many occasions the man who represents this publication in Europe.



How Problem of Salvaging Hulls of Battleships Was Solved. See Page 932

Do You Know That—

2427 subscribers to IRON TRADE REVIEW are connected with the operation of heat-treating plants. The series of articles on heat treating, written by experts and now being published in IRON TRADE REVIEW, is being read by heat treaters everywhere.

Second Quarter Opens With Good Tonnages of Pig Iron on Makers' Books and Absence of New Buying—Prices Steady

PITTSBURGH, April 1.—The pig iron market is stagnant. No tonnage inquiries are before the trade this week. Sellers say they have experienced nothing like it in the past 20 years. Buyers are taking single carloads or 100 tons at a time. Last week 500 tons of basic was sold by the Colonial Iron Co. at $21.75, valley. Most valley producers are quoting $22 to $23. Single carload sales of bessemer iron are noted at $23 or $23.25 valley. The Pressed Steel Car Co. bought 500 tons of malleable at $22.25, valley. Small lots of foundry iron are selling at $22 to $23. Valley producers refuse to go below $22.50. A middle interest is offering distress lots at $22. Low phosphorus, malleable and gray forge inquiries are absent. Active merchant producers are shipping out all or slightly more than they are making.

Average sales prices for bessemer iron in the valley for March as compiled by W. P. Snyder & Co., was $23.375, compared with $23.50 for February. The March average for basic was $22, the same as for February.

Prices Still Weak

Boston, April 1.—Sales of pig iron throughout New England are small. Close observers believe that half of the second quarter tonnage still is to be placed, and at the present rate of consumption this means about 50,000 tons. Sales of the past week include 500 tons to a Connecticut consumer and 200 tons to a Massachusetts user. Eastern Pennsylvania prices continue low. At least one furnace has sold during the week on $22 furnace base, or $25.65 delivered. One sale of 100 tons of No. 2X Buffalo, (2.25 to 2.75 silicon) is reported at $21.50, furnace, or $26.41, delivered. Other Buffalo tonnage has been placed at $22, base. Several sales of Pennsylvania iron at $23.50 for No. 2X, iron (2.25 to 2.75 silicon) are reported. Inquiry is dull. A Massachusetts foundry is asking for 100 tons for April delivery. Another foundry is in the market for 300 tons.

Inquiry More Active

New York, April 1.—Sales of pig iron in this territory during the past week aggregated 2500 tons. New inquiries are more active. A New Jersey foundry wants 1200 tons of foundry. A New York state melter wants 200 tons. The New York Central railroad is in the market for 500 tons. One of the interesting developments during the past week was the purchase by a New Jersey interest of 600 tons of foundry iron for third quarter shipment. The market is easier and eastern foundry iron may be quoted at $22 to $23, furnace. The Buffalo market is $21 to $21.50, base furnace.

Inquire at Buffalo for 5000 Tons

Buffalo, April 1.—Inquiry for pig iron amounts to about 5000 tons, including one lot of 1000 tons; one of 600 to 700 tons for the East, and another of 600 tons for eastern Pennsylvania. A Cortland, N. Y. melter placed 3000 tons of basic in this district, probably with more than one furnace. Action on the New York Air Brake Co.'s additional inquiry of a week ago for 1500 tons of high silicon foundry iron is believed to have been deferred for the present. The market for small lots of 1.75 to 2.25 silicon iron is $22, but this price and $21.50 have been shaded on tonnage placed in this market in the past two wesks. One of the local makers announces it will have no more iron to sell for the balance of the second quarter and will quote $22 for the third quarter. Resale iron may be a factor in this district soon.

Booked to 75 Per Cent

Cleveland, April 1.—At the beginning of the second quarter, blast furnace operators with headquarters in Cleveland report that they are booked up to 75 per cent of the quarter's output, on a basis of present operations. None claim to be below 75 per cent, while one states that 85 to 90 per cent of output for the next three months is covered by contract. This explains why prices are remaining comparatively stable in a market that is practically devoid of business. Shipments during the first quarter of the year averaged 15 per cent better than in the same period of 1923. One large merchant interest shipped in March 20,000 tons of iron from yard stocks, and all producers report substantial reductions in their stocks. Normal shipments are indicated for April. Consuming demand continues fairly good, though there is an extreme dearth of new buying. The largest merchant interest reports booking 2500 tons of iron of all grades for all furnaces during the past week. The bookings of three other large interests for the week were less than 1000 tons each. Several carload lots were closed for delivery in Cleveland at $24, furnace. For outside delivery the furnace price remains $23. A price of $23, valley, and $22, Buffalo, is quoted by one maker with headquarters here. The largest individual sale made by any company represented in the northern Ohio group was 500 tons, for a Michigan melter. Inquiries are scarce and for small lots. More sales could be made if producers were willing to guarantee buyers against price declines in the second quarter. Transactions in basic are lacking. The A stack of the Hanna Furnace Co. at Detroit, will be relighted this week, having been down for repairs.

Chicago Market More Active

Chicago, April 1.—Sales of pig iron are slightly larger than last week, with several 1000-ton lots reported. Activity remains low but the market is stronger and the undertone is improved. The foundry melt is keeping up as evidenced by good shipments of coke. Furnaces are active in working out iron booked early in the year. The general feeling is that Washington disclosures are near the end and that improved weather conditions are certain to help business. Occasionally small lots of resale iron are offered at $24, but furnaces are firm at $24.50. An interest circularizing the trade a short time ago with a small tonnage at $24 now is asking $24.50. The New York Central railroad is inquiring for 5000 tons of foundry and malleable for Elkhart. A Kalamazoo melter who inquired for 1000 tons of malleable has withdrawn. A Milwaukee melter seeking several hundred tons each of foundry and silvery irons also has withdrawn. A Chicago buyer, with Ohio plants, is inquiring for 300 tons each of foundry and malleable. A southern seller offering to meet competition with barge iron from Sheffield is making only small sales. Birmingham producers also are inactive. Southern sellers are more apprehensive over the market than northern interests. They fear worse conditions unless there is de-

cided improvement shortly. Charcoal iron sales are light at $26, furnace.

New Sales Are Small

Philadelphia, April 1.—Pig iron trade in eastern Pennsylvania has continued very small the past week. Foundry iron prices remain at $22 to $23, base, eastern Pennsylvania furnace. Some English low phosphorus iron has been sold in this district the past week at continuing prices of $26.76 to $27.26, Philadelphia consuming plants. Moderate sales also have been made of domestic copper-bearing low phosphorus iron, these prices depending upon the competition at the consuming points. A little malleable has been sold. Some phorus iron to the Toledo Steel Castings Co., Toledo, O., is noted. This was taken by a Tennessee furnace interest. Other sales include 100 tons of northern foundry iron to the Chandler-Taylor Co., Indianapolis, and 100 tons of southern iron to the American Foundry Co., Hamilton, O. While $23.50, Ironton, represents the southern Ohio market, furnace interests in some instances have obtained $24 on carlots. Sales of southern iron are few, and while the market is weak, prices remain unchanged. The market is quotable at $22.50 to $23, Birmingham, Ala. The $22.50 quotation applies to the product of the Tennessee furnaces. The Galion Iron Works, Galion, O., is inquiring for 400 Cast iron pipe stove manufacturers and other melters of iron are keeping up their operating records with prospects of increased activity. One of the smaller furnace companies in this district is about to reduce wages. Two others also are considering wage readjustments in conformity with their coal miners.

St. Louis Market Dull

St. Louis, April 1.—Less has been done in the pig iron market during the past few days than at any time this year. Sales aggregated less than 2000 tons. The trend of prices is easier. Small tonnages being sold at slightly less than current quotations. No. 2 southern is

Prices Present and Past

Representative market figures yesterday, and for last month, three months ago and one year ago

	Apr. 2, 1924	Mar., 1924	Jan., 1924	Apr., 1923
PIG IRON				
Bessemer, valley del., Pitts....	$24.76	24.86	24.66	32.77
Basic, valley	21.75	22.00	21.40	31.00
Basic, eastern del., eastern Pa....	21.50	22.00	22.50	30.75
*No. 2 foundry, del. Pitts.....	23.76	24.26	24.16	32.77
*No. 2 foundry, Chicago.....	24.50	24.50	23.70	32.50
*Southern No. 2, Birmingham...	23.00	23.00	21.60	27.00
*Southern Ohio, No. 2, Ironton.	23.50	23.50	22.90	31.00
**No. 2X, Virginia furnace.....	25.50	26.00	25.00	29.25
**No. 2X, eastern del., Phila..	24.13	24.13	24.26	32.00
Malleable, valley.....	22.25	22.50	22.00	31.00
Malleable, Chicago	24.50	24.50	23.70	32.50
Lake Superior charcoal, Chicago	29.04	29.04	29.04	36.55
Gray forge, val., del. Pittsburgh	24.26	24.26	23.56	31.77
Ferromanganese, del., Pitts.....	112.29	112.29	113.79	124.79
SEMIFINISHED MATERIAL				
Sheet bars, bessemer, Pittsburgh.	42.50	42.50	42.50	45.85
Sheet bars, open-hearth, Pitts....	42.50	42.50	42.50	45.85
Billets, bessemer, Pittsburgh.....	40.00	40.00	40.00	46.00
Billets, open-hearth, Pittsburgh..	40.00	40.00	40.00	46.00
FINISHED MATERIAL				
Steel bars, Pittsburgh.....	2.40	2.40	2.40	2.35
Steel bars, Chicago	2.50	2.50	2.50	2.43
Steel bars, Philadelphia.....	2.67	2.67	2.72	2.825

	Apr. 2, 1924	Feb., 1924	Dec., 1923	Mar., 1923
FINISHED MATERIAL (Continued)				
Iron bars, Philadelphia.....	$2.57	2.57	2.57	2.845
Iron bars, Chicago mills.....	2.40	2.40	2.40	2.60
Beams, Pittsburgh.....	2.40	2.50	2.50	2.45
Beams, Philadelphia	2.57	2.62	2.72	2.845
Beams, Chicago	2.60	2.60	2.60	2.53
Tank plates, Pittsburgh.....	2.40	2.40	2.50	2.45
Tank plates, Philadelphia	2.52	2.57	2.72	2.945
Tank plates, Chicago.....	2.60	2.60	2.60	2.53
Sheets, blk., No. 28, Pittsburgh.	3.75	3.75	3.75	3.85
Sheets, blue anl., No. 10, Pitts.	2.85	2.95	2.95	3.15
Sheets, galv., No. 28, Pittsburgh	4.90	4.90	4.95	5.00
Wire nails, Pittsburgh.....	3.00	3.00	3.00	3.00
COKE				
Connellsville furnace	3.75	4.05	3.80	6.25
Connellsville foundry, ovens....	4.75	4.85	4.35	7.80
OLD MATERIAL				
Heavy melting steel, Pittsburgh	18.00	19.75	21.10	25.85
Heavy melting steel, eastern Pa.	16.00	17.00	18.15	23.50
Heavy melting steel, Chicago...	15.50	16.70	17.40	22.40
No. 1 wrought, eastern Pa.....	18.50	19.00	20.10	27.00
No. 1 wrought, Chicago.....	15.25	16.05	17.50	22.75
Rails for rolling, Chicago.....	17.75	19.30	18.90	23.65

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.

Composite Market Average

Representing the Combined Average Prices Per Ton of Fourteen Leading Iron and Steel Products Yesterday, One Week, One Month, Three Months, One Year and Ten Years Ago.

Apr. 2, 1924	Mar. 26, 1924	Mar., 1924	Jan,, 1924	Apr., 1923	Apr., 1914
$42.91	$43.13	$43.24	$43.26	$47.01	$23.39

Products Included Are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

inquiry for basic iron has appeared but no sales have been made. The basic market is quotable at $21.50 to $22, delivered eastern Pennsylvania. Only two furnaces now are active in Virginia and one of these is expected to blow out about May 1. Virginia foundry iron is quiet at $25 to $26, base, furnace.

The Replogle Steel Co. has shut down its second and last active furnace at Wharton, N. J.

Sales In Small Lots

Cincinnati, April 1.—The pig iron market is devoid of features. Demand is fair, with the bulk of the buying in small lots. The most important transaction is the sale of 800 tons of malleable and foundry iron to the Bass Foundry & Machine Co., Fort Wayne, Ind. A sale of 400 tons of low phostons of northern foundry iron, while a melter in the northern part of the state wants a like tonnage of low phosphorus iron.

Southern Market Dull

Birmingham, Ala., March 31.—Sales of pig iron continue slow, and the tonnage is less than the output. However, many consuming industries are reporting a fair run of new business and more iron will have to be bought. Furnace interests in this district say they are not selling at $22.50, $23 being their minimum, while $23.50 is the price quoted by some manufacturers. Furnaces on the Tennessee river in Alabama have a little difference in freight rates but the bulk of their business is at $23. Delivery is being taken steadily by those companies which have bought liberally. freely offered $23, Birmingham. Chicago holds nominally at $24.50, but that price has been shaded. The leading local producer has reduced its price from $25.50 to $26, to $24.50 to $25, f.o.b. Granite City. The pig iron melt is holding up well, and steel plant operations are at a high rate.

Liquidation Postponed

Philadelphia, April 1.—Sale of the properties at Dunbar, Pa., of the American Manganese Mfg. Co. scheduled for March 31 has been postponed until April 28. Properties at Dunbar included blast furnaces, by-product coke plant, etc. Sale of 36,000 tons of manganiferous ore from Crow Wing, Cuyuna range was made last week.

Iron and Steel Prices

SCRAP PRICES, PAGE 950; WAREHOUSE, PAGE 942; ORE, NUTS, BOLTS AND RIVETS AND PIPE PRICES, PAGE 946

Pig Iron

Prices per gross ton

Bessemer, valley	$23.00 to 23.25
Bessemer, Pittsburgh	24.76 to 25.01
Basic, valley	21.75 to 22.00
Basic, Pittsburgh	23.51 to 23.76
Basic, Buffalo	21.50 to 22.00
Basic, del., eastern Pa.	21.50 to 22.00
Malleable, valley	22.25 to 22.50
Malleable, Pittsburgh	24.01 to 24.26
Malleable, Chicago	24.50
Malleable, Buffalo	21.50 to 22.00
Malleable, del., eastern Pa.	24.00 to 24.50

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X East'n and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 to 3.25
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern del., Phila.	24.63 to 24.76
No. 1X, Buffalo	22.50
No. 2 foundry, valley	22.00 to 23.00
No. 2 foundry, Pittsburgh	23.76 to 24.76
No. 2 foundry, Buffalo	21.50 to 22.00
No. 2 foundry, Chicago	24.50
No. 2 foundry, Granite City	24.50 to 25.00
No. 2 foundry, Ironton fur.	23.50 to 24.00
No. 2 foundry, Cleveland, del.	24.50
No. 2 foundry, del., Phila.	23.63 to 23.76
No. 2 foundry, N. J. tidewater	24.13
No. 2X, eastern del., Phila.	24.13 to 24.26
No. 2X, east. N. J. tidewater	24.63
No. 2X, eastern del., Boston	26.15 to 26.65
No. 2X foundry, Buffalo fur.	22.00
No. 2X, Buffalo, del. Boston	26.91 to 27.91
No. 2 southern, Birmingham	22.50 to 23.00
No. 2 southern, Cincinnati	26.55 to 27.05
No. 2 southern, Philadelphia	30.80 to 31.30
No. 2 southern, Chicago	28.51 to 29.01
No. 2 southern, Cleveland	29.01 to 29.51
No. 2 southern, Boston (rail and water)	29.91 to 30.41
No. 2 southern, St. Louis	28.17 to 28.67
No. 2X, Virginia furnace	25.50 to 26.50
No. 2X, Virginia, Phila.	30.17 to 31.17
No. 2X, Virginia, Jersey City	31.04 to 32.04
No. 2X, Virginia, Boston	31.42 to 32.42
Gray forge, eastern Pa.	22.00 to 22.50
Gray forge, val. del., Pitts.	24.26
Low phos., standard, valley	29.00
Low phos., standard, Phila.	nominal
Low phos., Lebanon, furnace	27.00
†Low phos., English, Phila.	26.76 to 27.26
Charcoal, Birmingham	33.00 to 33.50
Charcoal, Superior, Chicago	29.04

Silvery Iron

Jackson County, Ohio, furnace

7 to 8 per cent	31.00
8 to 9 per cent	32.50
9 to 10 per cent	34.50
10 to 11 per cent	36.50
11 to 12 per cent	39.00
12 per cent	41.50

Bessemer Ferrosilicon

Jackson County, Ohio, furnace

10 to 11 per cent	41.50
11 to 12 per cent	44.00
12 to 13 per cent	46.50

Ferroalloys

†Ferromanganese 78 to 82 per cent, tidewater, or furnace first hand and resale	107.50
Ferromanganese, delivered, Pittsburgh	112.29
Spiegeleisen 19 to 21 per cent furnace or tidewater	36.00 to 38.00
†Spiegeleisen, English, delivered tidewater	35.00 to 38.00
Ferrosilicon, 50 per cent contract freight allowed	75.00
Ferrotungsten standard, cents per pound contained	88.00 to 93.00
Ferrochrome, 60 to 70 chromium, 6 to 8 carbon, cents per pound contained, delivered	10.00 to 10.25
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	$3.50 to $4.00
Ferro carbon-titanium, carloads, producer's plant, per net ton	$200.00

†Duty paid.

Coke

Beehive, Ovens

Prices per net ton

Connellsville furnace	$3.75 to 4.00
Connellsville foundry	4.75 to 5.50
New River foundry	10.50 to 11.00
Wise county furnace	4.25 to 5.50
Wise county foundry	5.50 to 6.50
Alabama furnace	5.00 to 6.00
Alabama foundry	5.50 to 6.50

By-Product

Foundry, Newark, N. J., del.	$10.91
Foundry, Chicago, ovens	12.50
Foundry, Boston, delivered	12.50
Foundry, St. Louis	12.00
Foundry, Granite City, Ill.	12.00
Foundry, Alabama	5.50 to 6.50

Semifinished Material

Prices per gross ton

BILLETS AND BLOOMS

4 x 4-inch base

Open-hearth, Pittsburgh	$40.00
Open-hearth, Youngstown	40.00
Open-hearth, Philadelphia	43.17 to 45.17
Bessemer, Pittsburgh,	40.00
Bessemer, Youngstown	40.00
Forging, Pittsburgh	45.00
Forging, Philadelphia	48.17 to 50.17

SHEET BARS

Open-hearth, Pittsburgh	$42.50
Open-hearth, Youngstown	42.50
Bessemer, Pittsburgh	42.50
Bessemer, Youngstown	42.50

SLABS

Pittsburgh	40.00
Youngstown	40.00

WIRE RODS

¼-inch and finer

Wire rods, Pittsburgh	$51.00

Standard extras, $2.50 per ton over ¼-inch; $5 for screw stock; $15 for acid wire rods. Carbon extras, $3 for 0.20 to 0.40; $5 for 0.41 to 0.55; $7.50 for 0.56 to 0.75; $10 over 0.75.

SKELP

Grooved skelp, Pittsburgh	2.30c to 2.50c
Universal skelp, Pittsburgh	2.30c to 2.50c
Sheared skelp, Pittsburgh	2.30c to 2.50c

Shapes, Plates and Bars

Prices per pound

Structural shapes, Pittsburgh	2.40c to 2.50c
Structural shapes, Phila.	2.57c to 2.82c
Structural shapes, New York	2.59c to 2.84c
Structural shapes, Chicago	2.60c
Tank plates, Pittsburgh	2.35c to 2.50c
Tank plates, Philadelphia	2.52c to 2.82c
Tank plates, New York	2.54c to 2.84c
Tank plates, Chicago	2.60c
Bars, soft steel, Pittsburgh	2.40c
Bars for cold finishing, Pitts.	2.55c
Bars, soft steel, Philadelphia	2.62c to 2.72c
Bars, soft steel, New York	2.64c to 2.74c
Bars, soft steel, Chicago	2.50c
Bars, refined iron, Pittsburgh	3.15c to 5.00c
Bars, rail steel, Chicago	2.30c to 2.33c
Bars, rail steel, mill	2.10c to 2.20c
Reinforcing bars, billet, Pitts.	2.30c to 2.40c
Bar iron, common, Phila.	2.57c
Bar iron, common, New York	2.59c
Bar iron, common, Chicago	2.40c
Bars, forging quality, Pitts	2.65c

Hoops, Bands, Shafting

Prices per pound

Hoops, Pittsburgh, under 5 in.	2.75c to 3.00c
Hoops, Pittsburgh, 20 gage, under 1 in.	3.35c to 3.50c
Bands, Pittsburgh	2.75c to 3.00c
Cold finished steel bars, Pittsburgh base, carloads	3.00c
Cold-finished steel bars, base Pittsburgh, less carloads	3.25c
Steel shafting, Pittsburgh	3.00c
Cotton ties, bundle 45 lb. Pittsburgh	$1.70
Cut nails, Pittsburgh	3.00c

Rails, Track Material

Standard bessemer rails, mill	$43.00
Standard open-hearth rails, mill	43.00
Relaying rails, St. Louis	27.00 to 32.50
Relaying rails, Pittsburgh	30.00 to 34.00
Light rails, 25 to 45, mill	2.00c
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	3.00c
Spikes, small railroad, Pitts.	3.25c to 3.50c
Spikes, boat and barge, Pitts.	3.50c
Spikes, railroad, Chicago	3.10c
Track bolts, Pitts. Standard	4.00c
Track bolts, Pitts., small	4.75c to 5.00c
Track bolts, Chicago	4.10c
Tie plates, Pittsburgh	2.55c to 2.60c
Ties plates, Chicago	2.60c

Spike, tie plate and truck bolt prices for carlots.

Wire Products

To Jobbers in Carloads

Prices per pound

Wire nails, Pittsburgh	3.00c
Galv'd nails, 1-inch and over	5.25c
Plain wire, Pittsburgh	2.75c
Annealed wire, Pittsburgh	2.90c
Galvanized wire, No. 9 gage, Pittsburgh	3.35c
Barbed wire, painted, Pitts.	3.45c
Barbed wire, galv., Pitts.	3.80c
Polished staples, Pittsburgh	3.45c
Galvanized staples, Pittsburgh	3.80c
Coated nails, count keg, Pittsburgh	2.60c
Woven wire fencing (retailers)	65 off
Woven wire fencing (jobbers)	67½ off

Chain, Piling, Strip Steel

Prices per pound

Chain, 1-in. proof coil, Pitts.	6.00c
Sheet piling base, Pittsburgh	2.55c
Hot rolled strip steel, Pittsburgh stamping quality	2.75c to 3.00c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, 0.100-inch and heavier, base	4.75c to 5.00c

Sheets

SHEET MILL BLACK

Prices per pound

No. 28, open-hearth, Pitts.	3.75c to 3.85c
No. 28, bessemer, Pitts.	3.75c to 3.85c
No. 28, open-hearth, Phila.	3.97c to 4.17c
No. 28, open-hearth, Chicago	4.09c to 4.19c

TIN MILL, BLACK

No. 28, open-hearth, Pitts.	3.75c to 3.85c

GALVANIZED

No. 28, open-hearth, Pitts.	4.90c to 5.00c
No. 28 bessemer, Pittsburgh	4.90c to 5.00c
No. 28, open-hearth, Phila.	5.17c to 5.32c
No. 28, open-hearth, Chicago	5.19c to 5.34c

BLUE ANNEALED

No. 10, open hearth, Pitts.	2.85c to 3.00c
No. 10 bessemer, Pittsburgh	2.85c to 3.00c
No. 10, open-hearth, Phila.	3.22c to 3.32c
No. 10, open-hearth, Chicago	3.34c

AUTOMOBILE SHEETS

No. 22 Pittsburgh	5.20c to 5.35c

Tin Plate

Prices per 100-pound box

Tin plate, coke base, Pitts.	$5.50

Iron and Steel Pipe

Base Discounts Pittsburgh to Jobbers in Carloads

	Black	Galv.
1 to 3-inch, butt steel	62	50½
1 to 1½-inch, butt iron	30	13

Boiler Tubes

Less Carload Discounts—Carloads 4 Points Additional

Steel 3¼ to 3¾-inch	38½
Charcoal iron, 3¼ to 4½-inch	5
Seamless hot rolled, 3½ to 3¾-inch	35

Cast Iron Water Pipe

Prices per net ton

Class B Pipe

Four-inch, Chicago	$61.20 to 62.20
Six-inch and over, Chicago	57.20 to 58.20
Four-inch, Birmingham	52.00 to 53.00
Six-inch and over, Birmingham	48.00 to 49.00
Four-inch, New York	65.60 to 66.60
Six-inch and over, New York	60.60 to 61.60

Standard fittings, Birmingham, base, $110.00 6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $5 higher than Class B.

Scrap Decline Is Steady

Buyers Rule in Market and While Some Sales Made Most Hesitate—Quotations Yield Further on Indifference

SCRAP PRICES, PAGE 950

Chicago, April 1.—Iron and steel scrap continues weak but the decline is less precipitous. Heavy melting steel has been sold as low as $15.50 and some brokers are understood to have covered at $16 some steel for immediate delivery to a local melter. Prepared steel is said to be disappearing rapidly from yards. Dealers have been fair buyers of cast iron borings. One melter has taken in some distress couplers and knuckles. A local melter took 2000 tons of railroad malleable at $21, delivered, a few days ago. Earlier in the week many lots of car wheels were offered, but these have been taken in. In general, melters remain aloof and prices are soft. Foundry grades are slow, but cast has been displaying more inherent strength than steel. The market now is at the general level of $15.50 to $16 for steel.

Heavy Melting Steel Slips

Boston, April 1.—Iron and steel scrap has failed to recover from the slump of two weeks ago. Heavy melting steel prices have declined further and sales as low as $11 shipping point have been made. This is undoubtedly below the market for reports of heavy melting steel sales at $12.50 and even $13 are current. Other grades of scrap are moving moderately and without feature. Blast furnace borings have sold at $10.50 shipping point for delivery to eastern Pennsylvania points. Cast grades are listless but prices remain unchanged. No. 1 machinery has sold within the last day or two at $22, delivered.

More Decline In East

New York, April 1.—Quotations on scrap continue to decline, several grades having been reduced by dealers during the past few days. Borings and turnings have been marked down 50 cents a ton, and a similar reduction has been made in grate bars. The sharpest reduction has been in rails for rolling, amounting to $1, following a similar reduction the week before. Prices on heavy melting and No. 1 railroad steel are unchanged, but far from strong. As the case for some time, trading is listless in virtually all lines.

Buffalo Lacks Buying

Buffalo, April 1.—Lack of buying makes the scrap market nominal. One important transaction was the sale of 1000 tons of malleable at $19.50 to $20. Heavy melting steel is being quoted at $17.50 to $18.50, though dealers believe it would be necessary to pay $18.50 for a tonnage. One mill has been buying some small lots at lower than $17.50, but hardly sufficient to determine the market. Some dealers are paying $17.50 on old orders. Mill operation is about to be cut, it is believed.

Buyers' Market At Detroit

Detroit, April 1.—The iron and steel scrap market is regulated entirely by consumers, prices undergoing further recessions due to indifference. Dealers report some small tonnage worked, but at buyers' figures. Yard men are supplied beyond their needs with yards filled and unable to ship to consuming points.

An average decline of 50 cents a ton is made in most grades. Hydraulic compressed sheets are down $1 a ton from last week. Large producers in this section have large scrap lists for April delivery, but bids said to be far under the present market.

Decline At St. Louis

St. Louis, March 31.—Further sharp declines featured the market for iron and steel scrap. Hardly an item escaped downward revision, and some grades lost $2 per ton. The most depressing factor was oversupply, including some distress scrap. Buyers took advantage of this to lower their bids, and managed to pick up tonnages at bargains.

Analysis develops that a number of important users, particularly among steel mills, purchased much more scrap than they had been given credit for. The melt has kept up, however, and surplus stocks have been heavily drawn upon and the market has worked back to advantageous levels for consumptive buying.

Yard stocks are liberal, and assortments fairly broad. About the only grade which is at all scarce is machinery cast, which holds relatively firm. The railroads continue to move and offer scrap heavily. Among railroad lists are 3500 tons by Missouri Pacific, 1000 tons by Chicago, Burlington & Quincy, 33,000 tons by Pennsylvania and a blind list by the Big Four.

Prices Still Sagging

Philadelphia, April 1.—Although somewhat better business has been done in iron and steel scrap the past week, including several thousand tons of melting steel, stove plate, blast furnace and steel works borings and other grades consumers generally continue to hesitate and prices still tend lower.

Market Holding Its Own

Birmingham, April 1.—The southern scrap iron and steel market is hold-

(*Concluded on Page* 899)

Semifinished Trade Slack

Sheet Bars Remain at $42.50 Despite Buyers' Efforts To Develop Lower Prices—Few Inquiries Before Makers

SEMIFINISHED STEEL PRICES, PAGE 889

Pittsburgh, April 1.—Spasmodic inquiries appear for sheet bars and slabs but rerolling billets are practically inactive. Three slab inquiries in particular calling for 3500, 3000 and 1000 tons, respectively, are now before makers, originating with blue annealed sheet manufacturers. The sheet bar buyers are endeavoring to develop quotations lower than $42.50, Pittsburgh or Youngstown, but it is claimed that this level is firm. Slabs are quoted again at $40, the same as 4 x 4-inch rerolling billets. Smaller billets, if the tonnage is sufficiently large to be attractive to the mill, probably would carry the $40 figure, although some mills are disposed to insist upon the $2.50 differential.

Several forging billet users have contracted for their second quarter needs and a few others have inquiries pending. The price on forging billets is unchanged at $45. A few cold-drawn steel bar interests as well as several rivet makers have closed on their second quarter wire rod needs at $51 base. Skelp can be quoted at a minimum of 2.30c, base Pittsburgh, although specifications still are received from time to time on business which now is being taken at the 2.50c price.

New Business Lacking

Youngstown, O., April 1.—Slowing of demand for various finished steel products has made semifinished tonnage available for the open market. Inquiry for billets, slabs and sheet bars, however, is scarce and the bulk of the business being transacted is in sheet bar specifications. While sheet producers are taking sheet bars right along, specifications in this direction are beginning to show a slight decline. Sheet bars are being quoted at $42.50, Youngstown, and slabs and rerolling billets at $40, Youngstown. New business is lacking.

Specifications Liberal

Cleveland, April 1.—Specifications on sheet bars, billets and slabs are coming to the leading maker in this district in good volume, and shipments continue heavy. Nothing further has been booked since the covering of regular customers' needs for the second quarter. Few transactions are to be noted in the open market. Sheet bars remain quotable at $42.50, Youngstown, and billets and slabs at $40.

Billet Sales Small

Philadelphia, April 1.—Billets sales in the past week comprised small lots which went at $40, Pittsburgh, for rerollers and $45 for forging, large lots could be had at less.

Spiegel Tonnage

Is Purchased by Belgium—Other Ferroalloys Are Quiet

FERROALLOY PRICES, PAGE 889

New York, April 1.—A sale of 1000 tons of 16 to 19 per cent domestic spiegeleisen to Belgium was the feature of the week's market. Several hundred tons of this metal also was sold to domestic consumers. The market now is on the basis of $36 to $38, furnace, for 20 per cent. Sales of ferromanganese in the week totaled about 1000 tons which was made up entirely of small lots for prompt shipment. The market is firm at $107.50, duty paid tidewater.

Sales of the special ferroalloys have

been small and scattered. Shipments in March were fairly heavy but not up to the rate of February. The rate of April shipments cannot be determined, as releases will not be in until next week. Tungsten ore has been selling at $8.60 to $8.75 a short ton unit; ferrotungsten is quoted 88 to 93 cents a pound contained; tungsten powder, 98 cents to $1 a pound. Fifty per cent ferrosilicon is quoted $75, delivered; 75 per cent, $135, delivered; 14 to 16 per cent, $40 to $42, furnace. Ferrochrome is holding at 10 to 10.50 cents a pound contained, delivered, for the 4 to 6 per cent carbon grade; 10 cents for the 6 to 8 carbon grade. A resale lot of foreign alloy is offered for delivery from New York stock at 9 cents for the 6 to 8 carbon grade and at 9.25 cents for the 4 to 6 grade. Ferrovanadium has been selling for export on an increasing scale, principally of high vanadium and low silicon content, prices ranging from $4.08 to $4.30, c.i.f. European port. The domestic price is unchanged at $3.50 to $4 a pound contained, according to quantity and analysis.

Meager Activity Is Noted

Pittsburgh, April 1.—Ferroalloys continue inactive. Only small filling-in tonnages are being purchased and while efforts have been made to obtain lower figures than the quoted bases, these have been fruitless; $107.50 seaboard base continues to be the market figure on ferromanganese, both imported and domestic. The Lebanon, Pa. furnace recently blown in by E. J. Lavino & Co., made pig iron last week but this week will be making ferromanganese. Buying of this alloy is being conducted along conservative lines by consumers. Only single carload orders are being taken. The Edgewater Steel Co. purchased a small carload of 15 per cent ferrosilicon at a price reported to be below $41. Another nearby consumer purchased 100 tons of the 12 per cent grade at about $39.50 f.o.b. producing point or about $52 delivered Pittsburgh.

Attractive Lots Placed

STRIP PRICES, PAGE 889

Pittsburgh, April 1.—Several attractive tonnages of hot and cold-rolled strip steel were placed last week, one particularly large lot being bought by a talking machine manufacturer. Other manufacturing lines have been fairly active. This makes up somewhat for the present lack of automotive business. While hot strips are quoted at 2.75c to 3.00c, base Pittsburgh, the tonnage would have to be exceedingly attractive to develop that minimum. It is understood one automotive interest closed on a large quantity below 2.75c but this buyer always obtains a preferential figure on account of tonnage. Cold strips are quoted at 4.75c to 5.00c, with the understanding that the lower figure applies to large tonnages. Makers' operations average around 80 or 85 per cent.

Caucasian Ore Sold

New York, April 1.—Sales of two cargoes of Caucasian manganese ore have been made during the past week. Since the conclusion of this business, asking prices have been 46 cents c.i.f. tidewater, for washed Caucasian ore, and 43 cents for the ordinary grade.

Coke Buying Is Deferred

Connellsville Producers Missing Second Quarter Contracts—Consumption To Be Lighter—Prices Show Further Weakness

COKE PRICES, PAGE 889

Pittsburgh, April 1.—Considerably less Connellsville furnace coke will be used in the second quarter than was consumed in the first three months of the year. Connellsville producers are missing a number of contracts. The Replogle Steel Co.'s stack will be blown out as soon as coke on hand is used. Its source of supply received a suspension a week ago. The Hubbard stack of the Youngstown Sheet & Tube Co. is already banked and may blow out. Coke shipments are suspended. The Hanna Furnace Co.'s stack at Dover, O. may use a substitute for Connellsville fuel throughout the second quarter. Its first quarter coke source failed to extend a contract. The Struthers Furnace Co.'s stack closed for the remainder of April requirements, and nothing definite is said about blowing out May. 1. One blast furnace, however, is negotiating for 5000 tons of high-grade Connellsville beehive coke to improve monthly its present mixture. It refuses to pay over $4. Another inquiry for a similar amount is indefinitely postponed. Two or three gas producers are closing contracts for the year, one taking 48,000 tons, another 50,000 tons, and a third 2500 tons monthly, all at $4. Others are closing for anthracite coal. A few took no action. The spot market is weak at $3.75. Small lots have been sold at that price. Some buyers now are wanting $3.50. Heating coke demands are meager, and $3.25 to $3.50 is quoted. Foundry coke has been sold to a middle interest at $4.50, its customer paying $4.75. Some producers are maintaining $5.50 as a minimum. Other sources are quoting $5. Premium brands are bringing around $6.

Production of coke according to the *Connellsville Courier* for the week ended March 22 was 238,840 tons, compared with 249,250 tons in the preceding week.

Eastern Prices Sagging

New York, April 1.—Because of the continued absence of buying, prices on coke are sagging. The market on spot standard foundry coke now ranges from $4.75 to $5.50, Connellsville. By-product foundry coke continues to be quoted at $10.91, delivered at Newark and other northern New Jersey consuming points. It is not yet known whether there will be a change in this price for April.

Prices Reduced at Detroit

Detroit, April 1.—Prices of by-product foundry coke have been reduced 50 cents to $10.50, ovens, by local producers, effective April 1.

Foundry Coke Reduced $1

Chicago, April 1.—By-product foundry coke has been reduced $1 and now is $11.50, delivered, Chicago.

Buying Still Restricted

Cincinnati, April 1.—Coke sales involve one to 15 carloads for early shipment. Sales of by-product foundry coke are satisfactory, while the movement of furnace is small. Connellsville foundry coke is offered here at $5 to $5.50, ovens. Some standard grades are bringing $5.75 to $6.50, in box cars, for prompt delivery. Wise county foundry coke ranges from $5.50 to $6.50, while New River foundry is quotable at $10.50 to $11, ovens. The Ashland By-Product Coke Co., producer of solvay by-product coke, started the distribution of its product this week. The price for April shipment is $8, Connellsville. Distribution of the coke formerly was supervised by Eaton Rhodes & Co., Cincinnati.

Consumption Holding Up

St. Louis, April 1.—Buying of coke by foundry interests continues on a hand-to-mouth basis, but the volume is large in the aggregate. Additional open-hearth furnaces have been lighted, and consumption is holding up well. Virtually all requirements are being taken care of by the by-product manufacturers. Prices are steady, the leading west-side producer continuing to quote $12 for foundry, and $8.50 for domestic sizes.

Southern Market Steady

Birmingham Ala., March 31.—The coke market in the Birmingham district is firm, but not strong. Independent producers report steady sales. The price range on foundry coke is $5.50 to $6.50, for beehive or by-product grade. One of the smaller producers of coke reports that its output in the last three months was almost equal to that in any three months during the early part of 1923, but profits were considerably less.

Appropriations For Trade Commission Reduced

Washington, April 1.—Efforts are being made on behalf of the federal trade commission to restore the $204,800 eliminated from its appropriations for the fiscal year beginning July 1. The appropriation last year was $955,000, and the commission asked for more than $1,000,000 to carry on its investigations. It is much disturbed over the cut in this year's appropriations, holding that this will interfere with its work. More than 500 cases are pending before the commission. Small chance is seen for bringing about a more generous allowance in the senate finance committee, although the original $955,000 may be restored.

1923 Rail Production Up 33 Per Cent

Production of steel rails in 1923, according to statistics just announced by the American Iron and Steel institute, totaled 2,904,516 gross tons. Compared with 2,171,776 tons made in 1922, the 1923 output was a gain of 732,740 tons, or 33.74 per cent. Of the total produced 2,738,779 tons was open hearth, 25,877 tons bessemer, 118 tons electric and 139,742 tons was rolled from old steel rails. Included in the total was 2142 tons of alloy rails. Works active in the United States during 1923 numbered 25.

Bar Users Buy Sparingly

Take Tonnage Freely but Are Not Covering Needs for Future—Specifications for April in Decreased Volume

BAR PRICES, PAGE 889

Chicago, April 1.—Leading producers of soft steel bars do not detect any letup in demand although buying is more and more for absolutely current requirements. Some implement makers are specifying more heavily for April than for March. The automobile business has let down about 15 per cent and some cancellations from auto parts makers are expected. Generally speaking, consumption is not noticeably lower and production continues at a high rate. Adverse political and stock market conditions are causing more cautious buying, but shipments are at an almost record rate. For soft steel bars the mill quotation continues 2.50c, Chicago.

Two rail steel mills are on double turn, with the others on single turn, but rolling schedules contain many holes. Rail steel commands 2.30c to 2.33c, Chicago.

Bar iron business at times is not sufficient to warrant single turn operations, and no improvement is discernible. The bar iron price is 2.40c, Chicago.

Bar Sales Improve

Boston, April 1.—Bar sales which dropped off rather abruptly after the middle of March have showed noticeable improvement and are reported in good volume. One company finds a 15 per cent improvement the past week. Domestic bars range from 2.35c to 2.40c, Pittsburgh. Talk of foreign bars has been revived but sales so far have been comparatively small. Offers at 2.25c duty paid Boston have been made.

Buying Is Quiet

Philadelphia, April 1.—Steel bar buying is quiet and orders are not replacing shipments. The market continues 2.30c to 2.40c, Pittsburgh, depending upon the attractiveness of the tonnage.

Specify Bars Less Fully

Pittsburgh, April 1.—Contracts for merchant steel bars have been booked as usual for the second quarter about equal to first quarter bookings, but specifications for April have been backward. Some have come through but in every case buyers are keeping them down to actual needs. Along with this meager buying is a constant effort to develop lower figures and some buyers are withholding specifications in an effort to drive the market down. While reports of concessions under 2.40c, base Pittsburgh, are being circulated, nothing definite can be developed. Refined iron has been offered at under 3.25c and 3.15c, base Pittsburgh, has applied in one or two cases where the tonnages have been particularly attractive.

Firmer After Concessions

Cleveland, April 1.—More price strength relatively continues to be shown by steel bars than in plates or shapes. At the same time concessions have been appearing from certain mills where orders have been attractive. Recent orders in this territory for soft steel bars have gone at 2.30c, Pittsburgh, and in a few cases 2.25c has been done to the remanufacturing trade. The market now seems firmer and reports which have been in circulation of a formal reduction from the 2.40c, Pittsburgh, level by leading producers are unfounded. Apparently the present price is to be maintained at which a fair amount of new tonnage continues to be booked. Automotive parts manufacturers in this district have not been affected to any important degree by the slowing down of certain automobile plants. The market is still running on a week-to-week basis with no buying very far ahead. Bands are weak with as low as 2.75c, Pittsburgh, being done. In some cases 2.90c is being paid. Hoops are steady at 2.90c.

Cold Finished Orders Fair

Pittsburgh, April 1.—Miscellaneous business in cold-drawn steel bars keeps coming in at a fair rate. Several single carload orders are noted, with orders for 200 to 300 tons, one for 200 tons coming from the Middle West to a maker here. Pleasing specifications on contracts arrive each day although there is an entire absence of speculative buying. Prices are unchanged at 3.00c base Pittsburgh, for carloads and 3.25c base Pittsburgh, for less than carloads.

Most Hoops at 2.90c

HOOP PRICES, PAGE 889

Pittsburgh, April 1.—It is understood most hoop and band business on books here carries a 2.90c Pittsburgh figure. Some barrel and keg makers have paid as high as 3.00c. Some buyers of wide hoops in large tonnages were able to close at 2.75c but 2.90c is more general. Backlogs are fairly large and operations are high, averaging around 85 per cent.

Bolt, Nut, Rivet Prices Being Shaded

NUT AND BOLT PRICES, PAGE 946

Pittsburgh, April 1.—Single carloads and a few orders for several hundred tons of nuts and bolts have come from jobbers and consumers the past week. Production is maintained at around 80 per cent and while backlogs are not large accumulations of small orders are fair. Some additional contracts have been written for second quarter. The regular discount on large machine bolts is 60 and 5 off but attractive tonnages have developed slight concessions, such as a discount of 60 and 10 off, according to the size of the order and the character of specifications. The same applies to rivets where the regular market is quoted at 2.75c base Pittsburgh, and buyers of large lots have obtained them at 2.65c. The discount on small rivets is from 70 and 5 off to 70 and 10 off. Some rivet makers have enough business to run at 70 per cent for two to three months, with what transient business comes in.

Ford Takes Large Order

Cleveland, April 1—Bolt and nut prices are fairly firm at 60 and 10 off for large machine bolts but shading has been done on large business. Current demand is of fair size with orders generally for small quantities. The Ford Motor Co. has placed with several makers an order for 14,000,000 small bolts and 14,000,000 nuts. This business went at exceptionally low prices. In fact, many makers considered it undesirable, because of the low price demanded although all the pieces were of one size. One maker, who quoted $12 per 1000 pieces, did not receive any of the business, while another maker who quoted slightly below this also was unsuccessful. A price of about $10 per 1000 pieces is thought to have obtained the order.

Spot rivet demand is dull and as low as 2.70c Pittsburgh has been done in this district. However, the general price is 2.75c. Lower than 2.70c has been done in other districts and undoubtedly a large order would develop a low price here. Contract business is being received in fair volume.

Buying Continues to Lag

Chicago, April 1.—Production of bolts and nuts has suffered no marked decline but users are displaying more inclination to buy only for most urgent needs. The letdown in the automobile industry is reflected in decreased specifications. One maker of bolts and nuts believes 60 and 10 off for large machine bolts is too low and is not actively soliciting business.

Tin Plate Prices

For Last Half May Be Higher—Deferred Till Later In Month

TIN PLATE PRICES, PAGE 889

Pittsburgh, April 1.—Announcement will not be made until later in the month by the American Sheet & Tin Plate Co. and independent manufactuers of tin plate regarding the price for the last half. An effort is being made by one large oil company of New York to place tin plate for export purposes for the last half, so that it can be rolled in May and June. Operations continue high, 95 to 100 per cent of capacity in the majority of cases on material for general line cans, packers' can, fruit, fish and vegetable containers. Shipments are relatively high. The price is firm at $5.50 per base box of 100 pounds, Pittsburgh. Some of the independent producers are paying high prices for pig tin, and state they are not coming out even. It is possible that a higher quotation will be introduced for the last half. Stock tin plate continues to be disposed of at $5 to $5.25.

Cover Third Quarter Needs

New York, April 1.—Several oil companies recently have placed additional tin plate tonnage involving considerable of their third quarter requirements, for delivery as much as possible in the second quarter. This business is under $5.50, Pittsburgh. The increase in the tin price has added about 12 cents per

box to the cost of making tin plate. Stock tin plate continues $5.25 to $5.50.

Operating at High Rate

Youngstown, O., April 1.—Valley producers of tin plate are operating their mills at 90 per cent of capacity, and tin house equipment is on full schedule. Production plate is commanding $5.50 and stock sizes $5.25, per base box, Pittsburgh. Specifications against contracts are being issued more freely.

Silica Brick

Price Reduced $2—Fire Clay Unchanged—Decrease in Orders

Pittsburgh, April 1.—Fire clay brick prices appear to be fairly steady at unchanged levels, Pennsylvania No. 1 still being quotable at $42 to $45. Silica brick prices receded last week $2 per thousand. That grade now is quotable at $40. Included in the recent large orders is the brick for the by-product coke oven repairs of the Otis Steel Co., Cleveland. It is reported that additional ovens are to be built there for that interest, which will require a larger quantity of brick. Several million fire clay and silica brick were purchased for the 114 by-product coke ovens being built in the Chicago district, the silica brick order amounting to 4,000,000 being placed with a large producer here. It is reported in the trade that the 2,000,000 brick for the Youngstown Sheet & Tube Co.'s blast furnace installation have been placed. The Central Steel Co. job involving a similar amount still is pending. Small orders alone are noted for chrome and magnesite brick, the former involving 5500 or 10,000 brick at a time. Chrome brick prices are unchanged at $47, while magnesite also are quotably unchanged at $65.

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. works

Pennsylvania, No. 1	$42.00 to 45.00
Pennsylvania, No. 2	35.00 to 38.00
Ohio, No. 1	42.00 to 45.00
Ohio, No. 2	35.00 to 38.00
Illinois, No. 1	45.00 to 48.00
Illinois, No. 2	42.00 to 44.00
Kentucky, No. 1	42.00 to 44.00
Kentucky, No. 2	37.00 to 39.00
Missouri, No. 1	38.00 to 40.00
Missouri, high grade	48.00 to 50.00
Maryland, No. 1	42.00 to 51.00
Maryland, No. 2	40.00 to 42.00

SILICA BRICK

Pennsylvania	40.00
Chicago	49.00

MAGNESITE BRICK

Birmingham	50.00

Per Net Ton Seaboard Base

9 x 4½ x 2½	$65.00

CHROME BRICK

(Per Net Ton)

9 x 4½ x 2½	$47.00

Chicago Rate Unchanged

Chicago, April 1.—Operations of the Illinois Steel Co. continue heavy and it is unofficially reported that March will be found to have set a new high record for open-hearth steel production at the Gary works. The Inland Steel Co. continues to operate at capacity.

Plate Prices Are Weaker

Business Transacted at 2.35c, Pittsburgh—Larger Tonnage Figured on for Southwestern Oil Fields

PLATE PRICES, PAGE 889

Philadelphia, April 1.—Eastern platemakers are interested in requirements for 5000 Chesapeake & Ohio railroad cars, aggregating about 35,000 to 40,000 tons of plates. Bids will be opened in Richmond tomorrow. The railroad plans to let the cars and to furnish the material to the builders. The Pusey & Jones Co. booked a boat for the Norfolk & Washington Steamboat Co. DuPont interests are inquiring for two barges, requiring 400 tons of steel each. The Newport News Shipbuilding & Drydock Co. is low bidder for three gun barges for the Panama canal, each requiring 500 tons. With bookings less than shipments, operations continue around 55 per cent at eastern mills. With one eastern mill, March was the best month since last August. It is adding two open hearths to the active list, and expects April business will exceed that of March. Prices continue 2.20c to 2.35c, ittsburgh.

Eastern Market More Active

New York, April 1.—The Newport News Shipbuilding & Drydock Co. has booked two vessels for the Clyde Line and has placed the steel, 6000 tons, with the Carnegie Steel Co. No action yet has been taken on the two vessels for the Southern Pacific interests. A few thousand tons of car material has been placed in this territory during the past week. Action still is to be taken, however, on a very large tonnage involved in car orders recently placed. The East Jersey Pipe Co. has placed with Carnegie Steel Co. an order for 1200 tons of plates for a lock bar pipe line to be erected in Philadelphia. The Montauk Electric Co., Fall River, Mass., has placed 450 tons of tank work. The New York Central is in the market for its second quarter plate requirements. The Erie, Lackawanna and Lehigh Valley railroads also are in the market for some second quarter tonnage. The eastern plate market continues to be quoted at 2.20c to 2.35c, Pittsburgh.

The Standard Transportation Co. of New York is inquiring for five gasoline-propelled barges.

Plates Needed for Canada

Buffalo, April 1.—A Canadian carbuilder will be in the market soon for a tonnage of plates and shapes, for a Canadian railroad car contract. The total tonnage will be 3000, of which plates will be the greater part.

Orders Indicate Small Needs

Pittsburgh, April 1.—Plate needs as typified by orders are small. A number of inquiries involving fairly large tonnages are current including some penstocks, gas holders, and miscellaneous tank work. Oil companies issue inquiries for one, two or three tanks at a time, but are slow about closing. It is understood that the McCorkle Pipe Line Co. will require some extensive oil storage tankage in connection with its proposed line for Oklahoma-Texas. The Transcontinental Oil Co. had some small tanks under order but has suspended action on these. A new refinery at Huntington, W. Va., is understood to have ordered a few tanks from the Hammond Iron Works, Warren, Pa. The United States Engineers, Louisville, Ky., are taking bids until April 28 on five steel maneuver boat hulls and derricks, understood to involve 1000 tons or more. Plate prices continue at 2.40c to 2.50c Pittsburgh, although some lower figures have appeared elsewhere.

More Softness in Market

Cleveland, April 1.—More softness has been apparent in the plate market in this territory the past week and certain lots of ordinary character as to tonnage and specification have been bringing out 2.35c, Pittsburgh, from certain mills. The open market, however, remains at 2.40c, Pittsburgh, at which a fair amount of tonnage is being booked. Interests in this territory are following up some large oil tank propositions in the Southwest, one of which, it is estimated, requires about 25,000 tons. This particular lot of tanks is for the McCorkle Pipe Line Co. and these are to be used in connection with a long pipe line from the Oklahoma fields to the Gulf. It is believed this is the same proposition which was reported last week as coming from Fort Worth, Tex., and was described as a riveted pipe line. A large number of oil stills remain in the market. At least two boats are in active negotiation before lake yards.

Bookings Are Increasing

Chicago, April 1.—A more comfortable position in plates is being developed slowly by local makers. Merchant business is not being taken in startling tonnages, but gradually deliveries are falling behind. Up to recently, almost spot delivery was possible, but this condition is passing. Considerable pipe line and oil storage tank business is reported under consideration, but it has not yet materialized. If oil prospecting brings in additional pools, as is likely when viewed in the light of oil prospecting history, heavy tank demand will result. The plate quotations is 2.60c, Chicago.

Ore Price Not Made

ORE PRICES, PAGE 946

Cleveland, April, 1.—The market price of Lake Superior iron ore has not yet been determined. Furnace interests generally do not seem to be in any hurry to close, and the only definite tonnage of considerable size in the market is that of the Ford Motor Co. Negotiations on this 250,000-ton lot still are pending, and meanwhile other buyers appear to be waiting to see what is done in that transaction. Nothing sufficiently attractive has been offered to close a tonnage large enough to establish a market price. Reservations continue to be made, and small sales of dock ores are reported at last year's prices. Producers say the market is weak, but will not state at this time at what price they are willing to do business.

Reinforcing Bars Dull

Weaker Prices More in Evidence As Competition Increases for Meager Tonnages in Market—Several Thousand Tons in Cleveland Station

REINFORCING BAR PRICES, PAGE 889

Chicago, April 1.—Architects' boards continue crowded with building projects but the drag that is preventing them from actual awards is developing pessimism in some portions of the market. Small projects are fairly numerous and compare well with the volume at this time last year, but the larger jobs are not eventuating into awards. Shipments from warehouses are fair. There are indications that prices are not quite so firm. The warehouse spread on reinforcing billet bars continues 2.75c to 3.00c, Chicago.

Demand Is Broadening

New York, April 1.—Demand for concrete reinforcing bars is broadening somewhat and lettings last week in this territory were more numerous. The market as a whole continues quiet and the usual spring movement has not yet really begun. Prices are easy. The market on mill shipments may be quoted at 2.30c to 2.40c, base Pittsburgh. Material out of eastern warehouses can be had at 3.10c. The permanent industrial exposition building, Newark, N. J., originally designed in steel has been changed to concrete and bids are being taken on the general contract.

Quiet Market Benefits Buyers

Pittsburgh, April 1.—Increasingly attractive prices from a buyer's standpoint are obtainable apparently in the reinforcing concrete bar market, if the successful bids noted in connection with some recent awards can be taken as a criterion. Cutting and quantity differentials have been waived and mill prices have in some cases applied upon orders for bars from warehouse stocks. The lowest price reported quoted by a mill has been 2.30c, base Pittsburgh, although a lower figure is reported in connection with one inquiry for 1500 tons. The 2.40c price is perhaps more general although extras sometimes are set aside. Most of the jobs now out involve 20 to 40 tons and most of the recent awards involve similarly small lots. Four or five Pittsburgh contractors are bidding on the Hilliard road bridge at Cleveland, 750 tons. Stone & Webster, Boston, purchased 550 tons from a nearby independent steel company for two jobs in this and nearby districts at 2.40c, Pittsburgh, with cutting and quantity extras disregarded.

Lull More Pronounced

Cincinnati, April 1.—The lull in buying which has characterized the reinforcing bar market lately is more pronounced. Lettings in this territory last week involved only a few small tonnages and while there are several good sized jobs pending there is a disposition to postpone action. The price on new steel bars continues at 3.50c to 3.60c Cincinnati warehouse.

Increased Activity in Sight

Cleveland, April 1.—Increased activity in the concrete reinforcing bar market is in sight, although present awards are few and small. The leading prospective project in this district is a retaining wall for the Union terminal which will require from 2000 to 3000 tons. Plans are expected out on this about May 15. It is reported that work will proceed as soon as specifications are prepared and the tonnage is not expected to remain long in the market. Sales are restricted largely to small tonnage lots, the largest reported award last week, being 80 tons for road work in Ohio the contract being let to Bourne-Fuller Co.

Prices on concrete bars out of stock remain firm at 2.60c to 2.75c, Pittsburgh, with the customary shading for attractive tonnages which now are few. New steel bars still range from 2.30c to 2.40c, Pittsburgh, and rail steel bars at 2.10c, mill, with little in the market to test either quotation.

CONCRETE CONTRACTS PLACED

Awards this week	3,190 tons
Awards last week	2,590 tons
Awards two weeks ago	3,680 tons

450 tons, new plant for Westinghouse Electric & Mfg. Co., Sharon, Pa., purchased by Stone & Webster, Boston, from an independent steel company.
310 tons, addition to Homewood, Pa., plant of Westinghouse Electric & Mfg. Co., purchased by Hughes, Foulkrod & Co., from an independent steel company.
250 tons, cement tanks, Philadelphia, to Kalman Steel Co.
250 tons, Illinois road work, to Kalman Steel Co.
200 tons, western road work, to American System of Reinforcing.
200 tons, Richardson building, Cincinnati, to Ohio Building Co.
200 tons, Tribune Tower, Chicago, to the Concrete Engineering Co.
150 tons, Eastwick garage, Baltimore, to Concrete Steel Co.
150 tons, roadwork in Cleveland, including 110 tons for West Lafayette road to Concrete Steel Co.
150 tons, athletic stadium at Lewistown, Pa., for Bucknell college, to the Truscon Steel Co.
150 tons, Broadway building, Milwaukee, to Concrete Engineering Co.
130 tons, viaduct at Colliers, N. Y., to Concrete Steel Co.
100 tons, school at Solvay, N. Y., to Kalman Steel Co.
100 tons, roadwork near Meriden, Conn., placed with a rail steel mill.
100 tons, garbage incinerator, New York, to Truscon Steel Co.
100 tons, junior high school, Gilbert, Minn., to American System of Reinforcing.
100 tons, addition to plant of the Westinghouse Airbrake Co., Wilmerding, Pa., purchased by Stone & Webster, Boston, from an independent steel company.
100 tons, addition to Globe Folding Box Co., Cincinnati, to Bourne-Fuller Co.

CONCRETE CONTRACTS PENDING

2000 tons, new Masonic temple; Cincinnati; plans in preparation.
1000 tons, Beck's Run bridge for the Pennsylvania railroad at St. Clair borough, Pittsburgh; bids being taken.
800 tons, permanent industrial exposition building, Newark, N. J.; pending.
800 tons, ore dock at Ashland, Wis., for the Soo Line; bids in.
750 tons, Hilliard road bridge, Cleveland, bids close April 28.
340 tons, Brundage warehouse, Toledo, O.; action expected soon.
150 tons, bridge near Springfield, Mass.; pending.
150 tons, road work in Connecticut; pending.
120 tons, Oliver hotel, Cleveland; pending.
100 tons, St. Theresa Home, Cincinnati; bids in.
Several thousand tons, retaining wall around Union Station tracks and site, Cleveland; plans expected out about May 15.
Tonnage not stated, city hall, Akron, O.; A. G. Simon, Hippodrome building, Cleveland, engineer. Bids in April 19.
Tonnage not stated, New York Central passenger station, Elyria, O.; bids in April 8.
Tonnage not stated, Community Garage Co., Toledo, O.; pending.

Pipe Lines

Will Take Large Tonnages—Spring Aids Cast Iron Demand

PIPE PRICES, PAGE 889 AND 946

Pittsburgh, April 1.—Oil country goods, including line pipe, again is uppermost in the tubular goods market. Noted first and exclusively in the IRON TRADE REVIEW of March 6, the inquiry for line pipe from the McCorkle Pipe Line Co., now is being broadcasted. While one report has been circulated to the effect that it will eventually involve 1200 miles, large interests closely figuring the inquiry as at present issued, believe it will only require 850 miles, starting with the 10-inch size for both the main line and the lateral or tributary lines. At any rate, it is estimated that this will involve approximately 90,000 to 100,000 tons of pipe.

Another inquiry for a much smaller line of 20-inch pipe is out and a recent order for 6-inch pipe involved 1200 tons. An order for 300 miles of 12-inch involving about 35,000 tons is understood to have been placed here last week with a large producer by the Texas Co., or one of the Standard Oil interests. Miscellaneous oil country goods orders for one to four carloads at a time are fairly numerous. Pipe mill operations are maintained at an average of higher than 90 per cent. The river plants of the National Tube Co., particularly the buttweld furnace departments at the Pennsylvania works, McKeesport, as well as at Wheeling suffered a setback since Saturday due to river flood conditions. Jobbers have fairly well balanced stocks of full weight merchant pipe and their demands upon the mills now are not so urgent as they were a few months ago.

Municipal Buying Restricted

New York, April 1.—Municipal demand for cast iron pipe continues restricted, notwithstanding the substantial tonnage known to be under contemplation. Virtually the only feature at this time is the award of the general contract for installing and purchasing 2000 tons of pipe for the city water department to the Kelly Contracting Co. Award of the pipe is expected shortly. Private demand still is well maintained, with the market generally firm.

Heavier Projects Now Up

Chicago, April 1.—Coming of spring weather doubtless will bring an increase in cast iron pipe awards and already the number of small jobs calling for 25 to 30 tons each is increasing. The United States Cast Iron Pipe & Foundry Co. should be awarded formerly 5400 tons by the city of Chicago this week. In several weeks Detroit will take bids on 18,000 tons to 20,000 tons. Milwaukee will take bids, April 7, on 3500 tons. On the smaller sizes, pipe foundries are booked about 3 months ahead. The

quotation on 4-inch pipe continues $61.20 to $62.20 Chicago, and on 6-inch and over $57.20 to $58.20.

City officials at Kelso, Wash. are contemplating purchase of cast iron pipe for water system, at a cost of $373,140.

Plant Operations Near Capacity

Birmingham, Ala., March 31.—Cast iron pipe plants are operating to capacity or almost so. Little stock is being accumulated. Specifications are becoming more numerous and no doubt is expressed now but that the activity in operations will continue through the summer. The orders coming in are widespread, much business being offered west of the Mississippi and Ohio rivers. Quotations remain unchanged for both the pressure and soil cast iron pipe. The latter trade also is showing improvement.

CAST IRON PIPE PLACED

500 tons, Iron Mountain, Mich., to the National Cast Iron Pipe Co.
300 tons, Munster, Ind., to James B. Clow & Sons.

CAST IRON PIPE PENDING

3500 tons, Milwaukee; bids in April 7.
3295 tons, plain straight pipe, 338 tons lugged straight pipe, 175 tons special castings, for Milwaukee; bids open April 7.
320 tons, Rock Island, Ill.; bids in.
150 tons, Shorewood, Wis.; bids to be called shortly.
Tonnage unstated, Racine, Wis.; votes May 1 on $1,500,000 waterworks bond issue.
Tonnage unstated, Weatherford, Tex.; has $20,000 appropriation for 4-inch pipe extensions.

Award Contracts for Ford Rolling Mill Plant

Work on the first unit of the Ford Motor Co.'s new rolling mill installation will be undertaken this year, as is forecast by the placing of a large tonnage of structural material steel with the McClintic-Marshall Co., Pittsburgh. The main building, which is divided into numerous bays, will house a blooming mill consisting of four stands of 42-inch rolls and four stands of 32-inch rolls arranged in tandem; a billet mill, a chipping department, and a merchant mill. The blooming mill now is being built by the Hooven, Owens & Rentschler Co., Hamilton, O. Contracts for the billet and merchant mills have not as yet been closed as far as can be learned. The motor for driving the merchant mill, which is a 4500-horsepower unit, is being built by the General Electric Co., Schenectady, N. Y.

Approve Dock Plans

Pittsburgh, April 1.—The application of the Jones & Laughlin Steel Corp. for the construction of a dock along the right bank of the Monongahela river at Pittsburgh has received the approval of the water and power resource board at Harrisburg, with certain restrictions relative to the establishment of channel lines. This interest's planned construction of a loading and unloading station on the Ohio river at Woodlawn, Pa., also received approval.

The Eastern Rolling Mill Co., Baltimore, reports net earnings for the year ended Dec. 31, 1923, of $1,448,141, after taxes and all charges. Net earnings in 1922 were $32,454.

Sheet Prices Are Shaded

All Grades Affected by Weakness in Market—Leading Detroit Motor Car Builder Closes for 15,000 Tons

SHEET PRICES, PAGE 889

Youngstown, O., April 1.—A large Detroit automobile manufacturer has purchased his April requirement of 15,000 tons of sheets. The price is understood to have been 5.10c, Pittsburgh, although it is reported certain specific conditions governed the transaction. Warehouses in the Detroit district have been stocked heavily with automobiles by producers who early in the first quarter anticipated a large spring demand. Until these stocks are moved the demand for high grade sheets is not expected to broaden. Meanwhile producers are soliciting business at 5.35c, Pittsburgh. Tonnage entered at this figure is about keeping abreast of mill production. The tonnage of automobile seconds on mill floors is large, and the price is difficult to determine. Any reasonable offer will not be rejected. Trading in the common sheet market is not of a broad character. The mills have been applying stock items against orders and what remained was bought up by resellers. About 10 days ago a few makers set out to get business at 3.75c for black and 4.90c for galvanized. The number of producers meeting these prices has increased to the point where these prices now are considered the going market. Blue annealed is quotable at 2.85c to 2.90c, Pittsburgh. The Ford Motor Co. is understood to have closed on its April requirements of blue annealed sheets and plates. An eastern sheet producer offered in this district this week about 200 tons of 29 and 30-gage cutbacks at $45 a ton. Most producers have sufficient business in hand to schedule present active capacity two weeks in advance.

Sheet Prices Weaken

Boston, April 1.—Small tonnage of sheets was placed during the past week. Prices throughout New England are reported unstable. The regular market quotations are unchanged but concessions are made for attractive tonnages.

Order Need Is Indicated

Pittsburgh, April 1.—Price concessions are offered in practically all grades of sheets, many of the independent makers needing orders. These concessions, usually $2 per ton, are fairly general. Some interests recently entering the market have offered even lower figures, particularly on blue annealed and black, such as $3 under the going market levels. Prices maintained by the American Sheet & Tin Plate Co. are 3.00c, 3.85c, 5.00c and 5.35c, Pittsburgh, on blue annealed, black, galvanized and full-finished automobile sheets, respectively. Numerous customers are sending their business regularly to the leading interest, and new business and specifications in March were the best of the past five months. Large tonnages for all-steel box cars and car roofs help the market considerably, and miscellaneous demands from other consuming lines have held up well. Shipments are relatively heavy. A few additional contracts have been taken for the second quarter, although in the majority of cases the practice continues of sending in actual specifications without signing contracts. Recently, however, there has been some holding back of full finished and other grades of sheets used by automobile manufacturers, due to the fact that cold weather has militated against the sale of automobiles which has left stocks of finished machines on the makers' hands. Export sheet business with Canada, Mexico, Central America, South America, South Africa, Australia, China, Japan and European countries has been fairly extensive. An inquiry is before the trade from the Argentine republic for 45,000 tons of galvanized sheet. The inquiry is not sufficiently clear to enable sheet manufacturers to quote intelligently. Average operations among sheet plants is around 80 or 85 per cent of capacity.

Wants Galvanized Sheets

Cincinnati, April 1.—The Monitor Stove & Range Co. of this city, is in the market for 200 tons of galvanized sheets for second quarter delivery.

Chicago Prices Are Firm

Chicago, April 1.—In the past week more steel sheets have been booked than have been shipped in the Chicago district, and at the opening of the quarter capacity has been well booked. Quotations are firm at 3.00c, Pittsburgh, for blue annealed, 3.85c for black and 5.00c for galvanized. Local makers believe that with their order books so filled at the opening of the quarter, consumers who have delayed will find difficulty in being accommodated later.

Consumption Is Good

Philadelphia, April 1.—Despite lack of backlogs, eastern sheet mills are getting sufficient current business to keep operating at 75 to 100 per cent, showing good fundamental conditions among consumers. Demand for galvanized sheets is slowing up. Prices continue easy. Blue annealed is 2.90c to 3.00c, Pittsburgh; black 3.75c to 3.85c, and galvanized 4.85c to 5.00c.

Get Car Dumper Contract

McMyler-Interstate Co, Cleveland, has been awarded the contract by New York Central railroad for a car dumping machine to be erected at Ashtabula Harbor, O., at a cost of approximately $500,000. The machine will be similar to that recently completed by the McMyler company for the Philadelphia & Reading railroad. It will unload the contents of 40 120-ton railroad coal cars per hour or a capacity of 4800 tons per hour. The machine is to be ready for use by the opening of lake navigation season in 1925.

Graton & Knight, leather belt manufacturer, Worcester, Mass., is seeking to reduce its common stock from $2,000,000 to $200,000. The net profits for 1923 for this company are reported as $269,000.

Structural Sales Heavy

Railroad Bridgework Takes Large Tonnage—General Contracts on Chicago Projects Requiring 32,000 Tons Soon To Be Placed

STRUCTURAL SHAPE PRICES, PAGE 889

New York, April 1.—Bridgework is again a feature of the local structural market, with two of the larger awards involving 8400 tons and two inquiries calling for 6700 tons. Of this latter total, 5200 tons are for bridgework for the Baltimore & Ohio railroad. Other work has been steady with few particularly large items. Much attention is being centered at the moment on 8000 tons for additional construction at the plant of the Western Electric Co. at Kearny, N. J., bids recently having been closed. Little change is noted in prices. Plain material ranges around 2.40c to 2.50c, Pittsburgh, on the general run of work, with concessions possible on lots of several thousand tons.

Demand Is Encouraging

Boston, April 1.—Demand for structural shapes throughout New England is decidedly encouraging. Most fabricators report having booked favorable backlogs during March and new work looms more impressive. The Springfield bridge job of 3300 tons placed last week brought out strong competition. The American Bridge figure was $414,720 with a unit price of 6.40c. Next was Schnare, Springfield, with a unit price of 6.80c. Phoenix Bridge Co. was third with a unit price of 6.97c, and McClintic-Marshall Co. fourth with a unit price of 7.38c. Eastern steel mills report March as the best month in point of structural shape tonnage since last fall.

Close Bidding Is Rule

Pittsburgh, April 1.—Close bidding is the rule in connection with structural shape projects coming up for attention and revised bids are requested in almost every case. Awards have all been small since the one involving 15,000 tons to the McClintic-Marshall Co. last week for the Ford Motor Co.'s new steel plant at River Rouge, Mich. Some exceedingly low figures are being developed on material fabricated and erected since competition is keen among several fabricating shops which stand in need of work. Plain material prices are 2.40c to 2.50c, base Pittsburgh, although efforts continue to be made to develop still lower figures from the mills.

Belmont Bridge Bids In

Youngstown, April 1.—The Independent Bridge Co., Pittsburgh, was low bidder on the structural steel for the Belmont avenue viaduct requiring about 800 tons of material. The bid was $104,420. Other bidders were: McClintic-Marshall Co., $104,797.50; American Bridge Co., $109,177.50 and the Fort Pitt Bridge Works $111,547.50. The contract will be awarded after the Erie railroad, whose tracks the viaduct spans, checks the bids.

Small Inquiries Predominate

Cincinnati, April 1.—Small inquiries and lettings in the structural shape market are in the majority. The largest award last week here was 125 tons for a 250,000 cubic foot relief gas holder for the Minneapolis Gas Co., Minneapolis. The contract went to the Stacey Mfg. Co., which also has received several other small jobs. The Big Four railroad has asked for bids on 350 tons of shapes which represents its second quarter requirements. Bids are out for the new Gest street bridge, which will require about 125 tons.

Market Tone More Cheerful

Cleveland, April 1.—Inquiries for larger tonnages of shapes and rumors of speculative construction have given a more cheerful tone to the local structural market. Several large apartments and hotels are either actively in the market or are expected out soon. Awards last week were confined to small tonnage lots. Inquiry for smaller projects continues to come out in large quantity. Plain material prices openly are firm at 2.50c, Pittsburgh but 2.40c is being done on desirable business. Fabricating prices are stronger.

Large Jobs About to Break

Chicago, April 1.—Formal awarding of the general contracts for the new Palmer House to the Thompson-Starrett Co. and Stevens hotel to George A. Fuller Co. are expected in a few days, according to current reports. The former is a 17,000-ton job and the latter involves 15,000 tons. An inquiry for 6300 tons for a theater and office building in Chicago has made its appearance. The Santa Fe railroad is inquiring for 4600 tons for bridges and one building. The American Bridge Co. awarded two jobs the past week each requiring 2000 tons. The price of structural steel does not appear so much a deterrent to awards as the general uncertainty over the building trade situation, especially as regards wages after May 1. The plain material price continues 2.60c, Chicago.

STRUCTURAL CONTRACTS PLACED

Building awards this week	38,960 tons
Building awards last week.....	41,991 tons
Building awards two weeks ago....	24,656 tons

15,000 tons, rolling mill plant, Ford Motor Co., River Rouge, Mich., to McClintic-Marshall Co.

14,000 tons, Pictorial Review building, New York, reported awarded to Levering & Garrigues Co. in Dec. 27 issue of IRON TRADE REVIEW, now reported canceled and project definitely abandoned.

5000 tons, Florida East Coast railway bridge at Jacksonville, Fla., to Belmont Iron Works.

3400 tons, civic bridge, Springfield, Mass., to the American Bridge Co.

2000 tons, structural steel for Chicago & Northwestern railroad bridges, to the American Bridge Co.

1963 tons, Southern California Telephone building, Los Angeles, to the American Bridge Co.

1700 tons, building for Indemnity Insurance Co., Philadelphia, to Bethlehem Steel Co.

1500 tons, foundry building for Cadillac Motor Car Co., Detroit, to Whitehead & Kales Iron Works.

1000 tons, school No. 180, Brooklyn, N. Y., to the Hinkle Iron Works; this work previously was reported as going to another fabricator.

1000 tons, brewery, Montreal, Que., to Canadian Victors, Ltd.

800 tons, apartment at Nineteenth and Spruce streets, Philadelphia, to Belmont Iron Works.

800 tons, office building, Lancaster, Pa., to the American Bridge Co.

700 tons, Schwartz loft, 7-9 West Thirty-sixth street, New York City, to the Taylor-Fichter Construction Co.

700 tons, bridge at Hancock, Me., to American Bridge Co.

650 tons, Schroder & Koppel loft, 215-217 West Fortieth street, New York, to unnamed fabricator.

500 tons, buildings for Indiana Harbor works, Youngstown Sheet & Tube Co., to Worden-Allen Co.

500 tons, cotton mills, High Shoals, S. C., to unnamed fabricator.

400 tons, work for the Wabash railroad at Decatur, Ind., to the Mississippi Structural Steel Co.

400 tons, municipal pier, Charleston, S. C., to the Austin Bridge Works.

400 tons, woolen mill at North Smithsfield, R. I., general contractor Turner Construction Co., to unnamed fabricator.

400 tons, Whitman loft building, Twenty-sixth street, New York, to Harris Structural Steel Co.

400 tons, apartment on Fifty-fifth street, New York, to Paterson Bridge Co.

300 tons, Berkshire bridge, Springfield, Mass., to American Bridge Co.

300 tons, Conrad Glazier loft building at 233 West Twenty-sixth street, New York, reported awarded to George A. Just Co.

250 tons, office building at Thirty-eighth street and Seventh avenue, New York, to Paterson Bridge Co.

222 tons, reconstruction of Blue river bridge at Kansas City, Mo., to the Wisconsin Bridge & Iron Co.

200 tons, Oxford Paper Co. plant addition, Rumford, Me., to American Bridge Co.

200 tons, drawbridge at Atlantic City, N. J., to Chicago fabricator.

200 tons, small jobs Pittsburgh territory, to Pittsburgh-Des Moines Steel Co.

200 tons, two small jobs Pittsburgh district, to Pittsburgh Bridge & Iron Works.

150 tons, coal tipple for Roberts & Schafer Co., Hiawatha, Utah, to Worden-Allen Co.

125 tons, addition to Joliet power station of Public Service Co. of Northern Illinois, to Vierling Steel Works.

100 tons, miscellaneous work Pittsburgh district, to Jones & Laughlin Steel Corp.

100 tons, twin span turn table for the Great Northern railroad to the Bethlehem Steel Co.

100 tons, power unit, at Maxville, Ind., placed through Stone & Webster, Boston engineer, to unnamed fabricator.

STRUCTURAL CONTRACTS PENDING

8000 tons, additional units for the proposed Western Electric Co. plant at Kearney, N. J.; bids in. The Western Electric Co. originally asked for 4000 tons, but recently added another unit which brought the total tonnage pending up to the present figure.

7000 tons, Statler hotel, Boston; closing date extended to April 7.

5200 tons, bridgework for the Baltimore & Ohio; bids close April 8.

4100 tons, Liberty bank building, Buffalo, N. Y.; bids in April 9.

4000 tons, bridgework for Atchison, Topeka & Santa Fe railroad; pending.

3500 tons, pier sheds at Los Angeles; pending.

2200 tons, Hotel Dennis addition, Atlantic City, N. J.; postponed until fall.

1500 tons, bridge for the Virginian Railway; bids in.

1500 tons, Libbey-Owens Sheet Glass Co., Toledo, O.; A. Bentley & Sons Co., general contractor.

1200 tons, Hotel Poinsette, Greenville, S. C.; pending.

1200 tons, Euclid Oliver hotel, Twenty-fourth street and Euclid avenue, Cleveland; E. H. White, architect. Plans out.

1000 tons, Frank & Frank loft, West Thirty-sixth stret, New York; pending.

1000 tons, Alexander Hamilton hotel, Paterson, N. J.; bids in.

1000 tons, loft at West Fortieth street, New York; pending.

900 to 1000 tons, city hall, Akron, O.; bids in latter part of April.

800 tons, apartment at West Fifty-fifth street, New York; pending.

800 tons, school 28, Brooklyn, N. Y.; bids asked.

800 tons, Belmont avenue bridge, Youngstown; Independent Bridge Co. low with bid of $104,420.

750 tons, ore bridge at Pittsburgh for Jones

& Laughlin Steel Corp.; bids in.
700 tons, hotel, Portland, Me.; bids in.
600 tons, municipal bridge for Jamaica Bay, L. I., New York; bids close April 7.
500 tons, tank shop for the Davis Welding & Mfg. Co., Cincinnati; bids being taken.
500 tons, Hebrew Institute building, Pittsburgh; revised bids being asked.
400 tons, bank building, Washington; bids in.
400 tons, Chatauqua county bank, Jamestown, N. Y.; pending.
370 tons, John Dibert memorial hospital, New Orleans; bids in.
350 tons, signal bridges for the Atchison, Topeka & Santa Fe; bids in.
350 tons, addition to Edison Electric Light Co. plant, Cambridge, Mass.; bids in.
300 tons, State Street Exchange building, Boston; bids being taken.
300 tons, high school, Dunkirk, N. Y.; bids in April 8.
260 tons, Garfield high school, Akron, A.; bids being taken.
250 tons, sand blast and paint priming building at Topeka, Kans., for the Atchison, Topeka & Santa Fe railroad; bids close April 7.
150 tons, Y. M. C. A., Massillon, O.; James Meinhart Construction Co., general contractor.
150 tons, work for Wabash railroads; bids in.
100 tons, power house for the Great Western Paper Co. at Ladysmith, Wis.; bids in.
100 tons, Community Garage Co., Toledo, O.; Mills, Rhines, Bellman & Nordhoff, architect.

Wire Buying Light

Farm Conditions in Late Spring Interfere With Market for Fencing

WIRE PRICES, PAGE 889

Pittsburgh, April 1.—Slight changes for the better are seen by wire products makers. Consumptive demand appears to be fairly steady and miscellaneous small orders are being booked. In small nails, deliveries are four to five weeks deferred, and on some kinds of barbed wire post-date deliveries are being made, usually three or four weeks. While special terms on fencing and barbed wire were designed to stimulate buying it was only partially successful. Most of the fencing sold has been in connection with combination orders from jobbers. Prices are unchanged at 2.75c and 3.00c, base Pittsburgh, for plain wire and wire nails, respectively. Cement-coated nails have sold at 2.60c base Pittsburgh, although 2.50c is understood to have been done on some particularly attractive business.

Weather Still Is Adverse

Chicago, April 1.—Weather conditions in the middle, south and northwest territories continue unfavorable to buying of wire and wire products, particularly fencing. In manufacturing lines, a decline is noticed. Plant operations, remain at about 75 per cent. It is thought seasonable weather will greatly brighten prospects.

Steel Imports Heavier

Philadelphia, April 1.—Imports of iron and steel and ores into this port during the week ended March 26 were heavier than for some weeks past. Iron ore imports totaled 14,354 tons, 9604 tons coming from Sweden and 4750 tons from Spain. Other imports included 1066 tons of steel blooms from France; 3620 tons of steel scrap from England; 7982 tons of manganese ore from West Africa; 1018 tons of pig iron from France; 100 tons of ferromanganese from England and 30 tons of steel beams from Belgium.

Car Buying Is Quieter

Market Reacts from Heavy Awards of Past Months—Scattered Requirements Remain To Be Placed—Large Rail Orders in Sight

RAILROAD TRACK MATERIAL PRICES, PAGE 889

New York, April 1.—There has been little car buying, but inquiry is featured by lists comprising approximately 4000 cars. The leading inquiry is that of the Chicago, Burlington & Quincy, calling for 2000 stock cars. Locomotive buying includes five switch engines for the Reading placed with the Baldwin Locomotive Works, while inquiry includes three Mallet type locomotives for the New York Central, and according to reports, 10 locomotives for the Union Pacific. The Canadian Pacific has awarded 10 tenders of the Mikado tank type to the Canadian Locomotive Co.

The New York Central railroad is in the market for 5000 tons of plates, shapes, bars, sheets, wire, billets and other material for second quarter delivery. The Erie, Lackawanna and Lehigh Valley railroads are in the market for small tonnages of various materials for the second quarter.

The Long Island railroad is inquiring for 5000 tons of rails.

The Southern Pacific has increased its rail inquiry 10,000 tons bringing the total requirements up to 140,000 tons.

Canadians Improve Equipment

Washington, April 1.—Canadian railways continue to improve their equipment, says Consul General Halstead, at Montreal, in a report to the United States department of commerce. The Canadian Pacific railway recently purchased 1800 tons of steel from the United States for constructing 500 freight cars in the Angus shops, Montreal. About 3200 additional tons of steel for the construction of these cars has been ordered in Canada. In the Canadian car orders American steel makers ordinarily would have a good chance to furnish a considerable part of the steel, says the consul's report, but at present the Americans are handicapped to a considerable extent. The British steelmakers are continuing their active campaign in the Canadian market. They have the advantage of the British preference and of a depreciated currency.

Slight Improvement Is Noted

Pittsburgh, April 1.—A slight improvement is noted in the light rail market. Some less-than-carload sales brought 2.15c to 2.25c but on carload business the price quoted by both large and small producers has settled to 2.00c, base Pittsburgh. Rail-steel light rails continue to be ordered at $3 to $6 per ton under that figure. Unfilled orders of track accessory manufacturers are not as large in spikes as they are in tie plates, some tie plate producers being filled up until the end of July; others for 60 days. The Great Northern is now in the market for about 2000 tons of tie plates and may also buy some spikes. The Pennsylvania railroad still delays placing its track fastening orders. Buyers of large lots of standard spikes have developed a 3.00c price. On small spikes some makers have offered concessions under 3.50c, but that is the general quotation. The American Steel & Wire Co. continues to quote 3.25c on small cold spikes. Standard track bolts continue at 4.00c, base Pittsburgh.

More Locomotives Ordered

Philadelphia, April 1.—New locomotive orders include five for the Reading to the Baldwin Locomotive Works, 20 for the Southern to the American Locomotive Co. and five to the Baldwin works. Florida East Coast ordered 25 from the American company. The 2000 cars for which the Reading was in the market now are held up indefinitely.

Track Fastenings Are Active

Chicago, April 1.—Track fastenings were unusually active last week, nine carriers having placed business. One railroad placed 4500 tons of angle bars, to say nothing of a half-dozen smaller orders. Tie plate business by the leading maker last week totaled 1500 tons, and spikes and bolts 2500 tons. Most of the 140,000 tons of rails which the Southern Pacific railroad may buy doubtless will go to the Tennessee Coal, Iron & Railroad Co.

Railroad freight car buying is smaller, but this is an expected sequel to the heavy buying of the past few months. The Kansas City, Mexico & Orient railroad is getting prices on 1000 cars, but for appropriation purposes; financial rehabilitation must precede any buying. The Chicago, Burlington & Quincy railroad inquiry for 1000 stock cars, which has been pending some time, has been revived and placement is said to be near.

Rail Order Placed

Detroit, April 1.—The Detroit Terminal railroad has placed 1200 tons of 80-pound rails with the Bethlehem Steel Corp.

Shops Are Well Booked

Birmingham, Ala., March 31.—The Fairfield car works of the Tennessee Coal, Iron & Railroad Co. now has orders for 6900 cars which will keep it operating through July at high rate. Operations in the mills in this district are gaining.

CAR ORDERS PLACED

Kingan Refrigerator Line, 100 refrigerator cars, to the American Car & Foundry Co.
Swift & Co., 100 stock cars, to own plant.
Boston & Albany, 100 box cars to the American Car & Foundry Co. and 25 dump cars to the Western Wheeled Scraper Co.
Chesapeake & Ohio, two scale-test cars, to the Southwark Foundry & Machine Co.
Santa Fe, 26 miscellaneous coaches, to the Pullman Co.
Pittsburgh, Lisbon & Western, one gasoline baggage and passenger car, to the J. G. Brill Co.
Clinton & Oklahoma Western, one gasoline baggage and passenger car to the J. G. Brill Co.
Wichita Falls & Southern, one gasoline baggage and passenger car, to the J. G. Brill Co.
Union railroad, 500 hopper car bodies, to Greenville Steel Car Co.

CAR ORDERS PENDING

Missouri Pacific, 1000 box cars; bids asked.
Kansas City, Mexico & Orient, 250 stock cars and 250 gondolas, pending.
Chicago, Burlington & Quincy, 3000 cars; pending. Formerly announced as 1000 stock cars pending.

The Nonferrous Metals

Prices of Metals Continue Down and Brass Mill Products Join Movement—Buying Slow—Premiums on Tin and Lead Off

	Copper Electro delivered	Copper Lake delivered	Spot tin Straits New York	†Lead New York basis	Zinc St. Louis basis	Spot† aluminum	Spot antimony	Spot nickel
March 26.....	13.62½	13.75	51.00	9.00	6.32½	27.00	12.00	28.00
March 27.....	13.50	13.75	51.75	9.00	6.32½	27.00	11.87½	28.00
March 28.....	13.50	13.75	51.00	9.00	6.27½	27.00	11.50	28.00
March 31.....	13.50	13.75	49.50	9.00	6.27½	27.00	11.12½	28.00
April 1.....	13.50	13.75	49.50	9.00	6.20	22.00	11.00	28.00

†Outside market quotation.

NEW YORK, April 1.—Reduction of ½ cent in copper and brass rolled and drawn products base prices March 31, with a 1 cent cut on tubing and 2 cent cut on admiralty mixture, was recognition of lower products prices growing out of the recent decline in electrolytic copper.

A good inquiry has been in the market, but buyers have been holding off because of the uncertainty of the copper market. American copper prices at the beginning of April are down ½ cent below the price prevailing the first half of March. The decline is a reflection of slow domestic buying and of the speculative collapse in foreign markets resulting from the rise in the French franc. Throughout the list of materials based on electrolytic copper, including lake and casting copper and secondary copper there has been a similar adjustment. Export buying has improved slightly during the past few business days.

Zinc has been dull and easy, reflecting the same condition abroad as affected copper. Prices declined ½ cent during March to 6.25c, East St. Louis, as of April 1. Galvanizers have been buying only hand-to-mouth quantities, reflecting the character of their own bookings.

The outside lead market lost its premium of 1 cent a pound in March due to the break in prices in London. The A. S. & R. price has been cut under by independents to 8.85c, New York. For middle western shipment business is being done at 8.50c, East St. Louis.

Spot Straits tin commanded a sharp premium during March, due to the small arrivals here last month, deliveries amounting only to 4560 tons. However, beginning with March 31, the premium disappeared and today futures sold a little above spot, going to 49.85c. Indications are that supplies in April will approximate 7000 to 8000 tons. Straits tin prices the past week have ranged between 49c and 51c.

Antimony suffered a sharp break, amounting to 1 cent a pound in three days, due to heavy offers from the Orient. Spot was quoted down from 12c, duty paid, to 11c by March 31. Futures were offered at equivalent c.i.f. prices.

Spot resale lots of 98 to 99 per cent virgin ingot aluminum have been offering at 27c, delivered, which is the price of the domestic producer. Importers continue to quote 28c, delivered, for second half. The foreign situation is reported to be growing stronger.

The International Nickel Co. is quoting electrolytic nickel 30c; shot and ingot 28c; outside prices for shot and ingot range between 25c and 27c.

Mill Products

Base prices cents per pound, f.o.b. mill

SHEETS	
Copper, hot rolled, 4 oz., min..	21.25
High brass	17.75
Zinc, ga. 9 to 18 (plates ½c less)	**9.75**
Lead, full sheets (cut ¼c more)	**12.50**
Aluminum, base 18 ga. and up...	**36.40**
SEAMLESS TUBES	
High brass	21.50
Copper	22.75
RODS	
High brass, round, ⅜ to 2½-inch	15.50
Naval brass rods	18.25
WIRE	
Copper	15.50 to 16.00
High brass	18.25

Old Metals

Dealers' buying prices cents per pound

HEAVY RED BRASS	
Cleveland	9.25 to 9.50
New York	8.75 to 9.00
Chicago	9.00
HEAVY YELLOW BRASS	
New York	6.00 to 6.25
Chicago	6.75
Cleveland	6.25 to 6.50
ZINC	
New York	4.00 to 4.25
Cleveland	3.75 to 4.00
Chicago, dross	4.50
HEAVY COPPER AND WIRE	
Cleveland	10.75 to 11.00
New York	10.25 to 10.50
Chicago	10.50 to 11.00
RED BRASS TURNINGS	
New York	8.00 to 8.25
Cleveland	8.50
Chicago	8.50
YELLOW BRASS TUBING	
Cleveland	6.50
NO. 1 BRASS ROD TURNINGS	
Cleveland	6.25 to 6.75
New York	**6.75 to 7.00**
Chicago	6.75
ALUMINUM BORINGS	
Cleveland	**12.50**

First Gain Since June in General Employment

Washington, April 1.—Preliminary figures for 52 manufacturing industries compiled by the department of labor show that the iron and steel industry gained large in employment and pay-gained largely in employing. Employment in manufacturing industries as a whole increased 1.2 per cent over January, this being the first general increase since June, 1923.

The unweighted figures of employment in the 52 industries are based on reports from 8222 establishments, covering 2,693,636 employes, whose total earnings during one week in February were $72,552,483. In addition to the general increase in employment, an increase of 6.7 per cent in payroll totals and an increase of 5.4 per cent in per capita earnings also were shown. The end of January inventory season accounts for a part of these increases, although the reports show a decided and general upward tendency in employment and full-time and full-capacity operation.

Comparing February, this year, with February a year ago, the iron and steel industry shows substantial gains in both employment and payroll totals. The car building and foundry groups, however, show considerable losses. Comparing February with January, the automobile industry gained 25 per cent in payroll totals.

Ammonia Sulphate

Reduced in Dull Market—Other By-Products Are Steady

New York, April 1.—Continued dullness in the market for sulphate of ammonia has forced prices down to $2.70 to $2.75, works, compared with $2.75 to $2.80, recently. The export market, however, is unchanged at $2.70 to $2.75, port, in double bags.

The market for light oil distillates is unchanged, with the scarcity of toluol and solvent naphtha virtually the only feature. Prices may be quoted as follows: Pure benzol, 25 cents, works, in tanks and 30 cents in drums; 90 per cent, 23 cents in tanks and 28 cents in drums; xylol, 28 cents, works, in tanks and 33 cents in drums; toluol, 26 cents in tanks and 30 cents in drums, and solvent naphtha, 25 cents in tanks and 30 cents in drums.

No change is noted in naphthalene, which is holding at 6 cents, works, for flakes and 7 cents for balls. Phenol may be quoted around 28 cents works on contracts and up to 38 cents storage, on spot business.

Coke Oven By-Products

Spot*

Per Gallon at Producers' Plants in Tank Lots	
Pure benzol	$0.25
Toluol	0.26
Solvent naphtha	0.25
Commercial xylol	0.28
Per Pound at Producers' Plants	
Phenol	0.38
Naphthalene flake	0.06
Naphthalene balls	0.07
Per 100 Pounds at Producers' Plants	
Sulphate of ammonia	$2.70 to $2.75
Contract	
Pure benzol	Nominal
Toluol	Nominal
Solvent naphtha	Nominal
Commercial xylol	Nominal
Per Pound at Producers' Plants	
Phenol	$0.28
Naphthalene flakes	0.06
Naphthalene balls	0.07

*Spot distillates are subject to shading.

Krueger Machinery Co., San Antonio, Tex., has increased its capital from $250,000 to $300,000.

Begin Work on Canadian Alloy Steel Plant

Toronto, Ont., March 31.—Ground was broken March 29 for the construction of the first unit of the plant of the Dominion Alloy Steel Corp., Sarnia, Ont. The ceremony was performed by President W. B. Boyd, assisted by Mayor George A. Andrews, of Sarnia, in the presence of a large number of citizens and visitors.

The estimated cost of the unit is $1,500,000. Contracts for the foundation have been placed with Thomas Grace, construction engineer, and a large force of men have begun work. Contracts for the structure and equipment will be placed this week. Arrangements have been made for a supply of hydro-electric power. It is expected that the plant will be in operation by the end of September. The plans of the corporation include the erection of two other units.

While plans have been completed for an extensive layout and much larger production in the future, the mills will be constructed in units. They will have a capacity of 40,000 to 50,000 tons annually of alloy and fine steel. The first unit will consist of open-hearth and electric furnaces for production or bars and shapes. The construction work is in charge of R. D. Nye, who was associated with the construction of the Central Steel Co.'s plant at Massillon, O., and was formerly chief engineer with the United Alloy Steel Corp., Canton, O.

Absorb Coast Car Shops

Seattle, March 26.—While no official statement has been issued negotiations are progressing satisfactorily for transfer of control of the Pacific Car & Foundry Co., Renton, Wash., to the American Car & Foundry Co. It is understood the company is to be reorganized with increased capital furnished by the American Car & Foundry Co. L. T. Carroll, secretary of the American Car & Foundry Co. probably will be president. Mr. Carroll, C. S. Sales, member of the executive staff of the American Car & Foundry Co., and N. A. Stancliffe, attorney for the company, are here working out details with officers of the Pacific Car & Foundry Co. Under the reorganization Wm. Pigott, president, who is also vice president of the Pacific Coast Steel Co., will become chairman of the board.

Plant Police on 8 Hours

Youngstown, O., April 1.—Policemen at the Carnegie plants in this district went on an 8-hour shift today. The Youngstown Sheet & Tube Co. is putting its safety forces on 8 and 10-hour shifts. Other independents are preparing plans for a similar change. About 400 men in the district are effected by the change.

New Company To Handle Small Shipments

Formation of a shipping company to handle less-than-carload freight of all the railroads of the country in the same manner as express shipments now are handled, is contemplated. It is expected that the railroads would have the largest interest in the organization. The subject has been studied for the past year and a report has been made by a special committee composed of officers of the American Railway Express Co. It is pointed out that 6 per cent of the freight business of the railroads is handled in less than carloads. All of this would be turned over to the new company.

It is expected that the company would operate along the lines described in IRON TRADE REVIEW, Dec. 20, 1923, pages 1670-1677. In this articles it was shown how the Universal Carloading & Distributing Co. consolidates less-than-carload shipments into carloads, giving carload service, at lower cost than the railroad less-than-carload rates. The new company would pick up the freight at all points of origin and would complete deliveries, thus taking care of the trucking which most shippers now do themselves in connection with less-than-carload shipments. The formation of the company may result in withdrawal of the present less-than-carload freight rates. L. R. Gwyn, special assistant to the president of the American Railway Express Co., New York, is chairman of the committee which has been investigating the possibilities and practicability of this subject.

Steel Profits Grow

The annual financial statement of the Steel Co. of Canada, Ltd., Montreal, for 1923 showed manufacturing profits of $2,996,580, as against $1,962,169 the preceding year. Net profits after deduction of sinking fund, depreciation and bond interest were $1,887,616, as compared with $903,597 in 1922. After payment of preferred dividends there remained a balance of $1,432,875 applicable to common stock. Working capital at the end of the year stood at $11,279,810, as against $9,907,266 at the end of 1922.

Scrap Decline Is Steady

(*Concluded from Page* 890)

ing its own; there has been no further weakening; dealers are making little effort to get business beyond the next 90 days and spot business is being accepted and filled. Stocks on yards are being kept up. Heavy melting steel continues slow. No. 1 cast and stove plate continue the active products.

Cincinnati Market Lower

Cincinnati, April 1.—Iron and steel scrap prices continue to recede in absence of buying and heavy offerings. Consumers are waiting but are receptive of bargain prices. The entire list has marked down 50 cents a ton. Heavy melting steel is at its lowest level in more than six months. Railroads continue to offer large lists. The Pennsylvania railroad is in the market with 40,000 tons. The Big Four railroad has 3500 tons of miscellaneous scrap for disposal.

Idle at Pittsburgh

Pittsburgh, April 1.—Since the sale last Thursday to a Weirton, W. Va., user of 3500 to 5000 tons of heavy melting steel scrap and a tonnage of sheet scrap and turnings, the market has been idle. A few single carloads or 100-ton lot sales comprised the activity the past few days. Prices still show weakness, the heavy melting steel sold to Weirton bringing only $18. One or two offers to pay $17 today are in the hands of dealers but they are finding it difficult to find material to sell at that price, and the market is quotable at $18. It is expected heavy melting steel of the Pennsylvania railroad's combined list, which closes today, will bring around $18. For specialties no more than $20 to $20.50 can be obtained. Machine shop turnings are down another 50 cents, as are rerolling rails, and low phosphorus punchings. A small order for heavy breakable cast was taken at $18 and that grade now is quotable at $17.50 to $18.

Buyers Play Waiting Game

Cleveland, April 1.—Consumers of iron and steel scrap in this district continue to play a waiting game so far as new purchases are concerned. Apparently they believe prices will go lower in the present downward movement and will remain out of the market until they think the bottom has been reached. Even dealers are buying sparingly, chiefly filling in on contract obligations. Prices have been cut from 50 cents to $1 a ton on all grades excepting No. 1 cast which remains at $20.50 to $21. Heavy melting steel is down to $16.25 to $16.50; machine shop turnings, $11.75 to $12; cast borings, $12.50 to $12.75; hydraulic compressed sheets to $13.50 to $13.75.

Furnace Nears Completion

Construction work on the new 100-ton open hearth of the Republic Iron & Steel Co. is expected to be completed in about three weeks. Completion of this unit will give the Republic company a total of 15 open hearths and will increase its steel-making capacity about 70,000 tons annually.

March Pig Iron Output High

Total Production of 3,435,813 Tons Is 363,648 Tons Better Than February—Average Daily Output Shows Gain of 4895 Tons—Active Furnaces Increase Six to 269 on Last Day of Month

CONTINUING the rapid recovery made during January and February, production of coke and anthracite pig iron in March scored an increase of more than 360,000 tons over February and was the third consecutive month to show a gain. Part of the increase in production is due to the fact that March was a two-day longer month than February. Stack activity also continued to improve, six more furnaces being in operation on March 31 than on Feb. 29. At least two furnaces are known to have been banked at the month-end because flood conditions made operation impossible. A slight tendency to blow out furnaces is being noted, however.

MONTHLY PRODUCTION

	1924	1923	1922
January	3,015,480	3,228,226	1,645,804
February	3,072,165	2,993,918	1,630,180
March	3,435,813	3,523,595	2,035,908
April	.....	3,546,308	2,070,161
May	.....	3,868,486	2,309,348
June	.....	3,667,868	2,362,455
Total 1st half	9,159,810	20,828,401	12,053,856
July	.....	3,684,677	2,403,030
August	.....	3,448,886	1,810,665
September	.....	3,117,526	2,024,008
October	.....	3,142,642	2,629,655
November	.....	2,891,191	2,846,110
December	.....	2,912,527	3,083,520
Total 2nd half	.....	19,197,449	14,796,988
Grand total	9,159,810	40,025,850	26,850,844

Production of pig iron in March totaled 3,435,813 gross tons, which compared with the 3,072,165 tons of February represents a gain of 363,648 tons. On an average daily basis, the March output was at the rate of 110,832 tons per day, an increase of 4895 tons or 4.6 per cent over the 105,937-ton daily output of the preceding month. The March daily rate of production represented 89 per cent of the historic high point of last May. Merchant iron produced in March totaled 704,582 tons against 679,700 tons in February, an increase of 24,882 tons. On a daily basis the March output was at the rate of 22,728 tons per day, a loss of 710 tons from the 23,438 tons of the month before. Steelworks or nonmerchant production totaled 2,731,231 tons, a gain of 338,766 tons over the 2,392,465 tons of February. Reduced to an average daily basis, this production represented 88,104 tons per day, or 5605 tons more than the 82,499 tons per day of the preceding month.

AVERAGE DAILY PRODUCTION

	1924	1923	1922	1921	1920
Jan.	97,273	104,136	53,090	77,895	97,172
Feb.	105,937	106,925	58,220	68,906	102,904
Mar.	110,832	113,664	65,674	51,447	108,895
April	.....	118,210	69,005	39,691	91,754
May	.....	124,790	74,495	39,202	96,510
June	.....	122,262	78,748	35,466	101,553
July	.....	118,860	77,517	27,892	98,190
Aug.	.....	111,254	58,408	30,802	101,468
Sept.	.....	103,917	67,466	32,859	104,143
Oct.	.....	101,375	84,827	39,821	106,075
Nov.	.....	96,373	94,870	47,165	97,836
Dec.	.....	93,952	99,468	52,992	87,105
Ave	100,657	109,659	73,563	45,223	99,456

Blast furnaces operating on March 31 totaled 269, this being a gain of six over the 263 active on Feb. 29. During the month four merchant furnaces were blown in while two were blown out or banked, the net gain being two furnaces. Of the nonmerchant class eight were blown in and four were removed from blast with a net gain of four. At least two of the stacks were banked because flood conditions necessitated. Of the 269 furnaces active on the last day of the month, 71 were merchant and 198 were nonmerchant. On March 31 the Steel corporation was operating 104 stacks as compared with 101 on Feb. 29 and 98 on Jan. 31.

Spiegeleisen made in March totaled 13,797 tons and was a gain of 3927 tons over the 9870 tons of February. Ferromanganese with 22,953 tons was an increase of 691 tons over the 22,262 tons of the preceding month.

DIVISIONS OF PRODUCTION

1923	Merchant	Nonmerchant	Spiegel	Ferromanganese	Other ferro
Jan.	713,186	2,515,040	12,056	19,358	952
Feb.	708,901	2,285,017	3,657	21,410	759
Mar.	767,219	2,756,376	13,832	20,730	236
April	795,558	2,750,750	7,440	20,810	670
May	909,726	2,958,760	9,533	19,568	892
June	899,102	2,768,766	18,184	19,717	874
July	900,496	2,784,181	12,876	26,493	776
Aug.	828,163	2,620,723	5,595	22,044	1,800
Sept.	734,754	2,382,772	4,478	23,206	1,860
Oct.	724,596	2,418,046	8,442	16,039	1,858
Nov.	726,686	2,164,505	16,783	14,839	3,259
Dec.	740,624	2,171,903	10,272	18,236	1,717
Tot'l	9,449,011	30,576,839	123,148	242,450	15,653
1924					
Jan.	707,710	2,307,770	7,948	19,735	...
Feb.	679,700	2,392,465	9,870	22,262	...
Mar.	704,582	2,731,231	13,797	22,953	...

Among the stacks blown in were: In Ohio: Central A, American Steel & Wire Co.; one Steubenville, Wheeling Steel Corp.; one Columbus, American Rolling Mill Co. In Pennsylvania: One Monessen, Pittsburgh Steel Co.; Donora No. 2, American Steel & Wire Co.; one New Castle, Carnegie Steel Co.; Lebanon, Lavino Furnace Co.; Claire, E. W. Mudge & Co. In New York: Buffalo B, M. A. Hanna Co. In Indiana: Gary No. 7, Illinois Steel Co. In Illinois: South Works Old No. 3, Illinois Steel Co.; one Iroquois, Youngstown Sheet & Tube Co.

Stacks blown out during the month were: In Ohio: One Hubbard, Youngstown Sheet & Tube Co. In Pennsylvania: One Aliquippa, Jones & Laughlin Steel Corp. In New York: Buffalo C, M. A. Hanna Co. In Virginia: Oriskany, Lavino Furnace Co. In West Virginia: Riverside Nos. 1 and 2, National Tube Co.

MARCH PIG IRON

	No. of stacks	No. in blast last day of month Mar.	Feb.	Total tonnage made Merchant	Nonmerchant	Total Mar.	Feb.
Pennsylvania	144	105	101	172,315	1,021,914	1,194,229	1,067,919
Ohio	78	58	56	154,382	676,012	830,394	736,958
Alabama	42	24	24	104,295	127,380	231,675	217,954
Virginia	19	2	3	10,681	.....	10,681	11,669
New York	27	20	20	65,068	144,540	229,608	212,048
New Jersey	4	1	1	13,006	.....	13,006	13,730
Illinois	26	22	20	103,871	252,674	356,545	304,837
Colorado	5	3	3				
Indiana	16	16	15	16,932	364,269	381,201	327,536
Maryland	6	6	6				
Wisconsin	6	1	1				
Kentucky	7	1	1				
West Virginia	5	2	4	11,380	62,393	73,773	66,332
Tennessee	14	2	2				
Georgia	2	0	0				
Texas	1	0	0				
Minnesota	3	3	3	20,731	57,220	77,951	81,050
Michigan	4	3	3				
Missouri	1	0	0				
Spiegel and ferro—all states	..	..	..	11,921	24,829	36,750	32,132
Totals	410	269	263	704,582	2,731,231	3,435,813	3,072,165

Orders of the American La France Fire Engine Co., during the year totaled $7,122,000, and those unfilled Jan. 1 were $1,400,000, compared with $1,300,000 a year ago. Net earnings for 1923 were $702,540.

Continental Prices Are Higher

Increase in Value of Franc Also Tends To Make Export Quotations Unattractive—Tata Power Co. Inquires for 50,000 Tons of Rails—Places 9000 Tons of Pipe in England—British Pig Iron Firmer

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LONDON, April 1.—The advance in the value of the franc, plus increases in prices, make continental export quotations unattractive. The Belgians are selling steel bars at 700 Belgian francs ($30.45); beams at 675 francs ($29.36); plates 775 francs ($33.71), and hoops at 1050 francs ($45.67) all f.o.b. Antwerp. Other continental prices are similar. French foundry iron is quoted at 410 francs ($22.67).

The British Mannesman Tube Co. has been awarded an order for 9000 tons of riveted pipe for the Tata Power Co., India. The latter company also is inquiring for 50,000 tons of rails.

Prices on English pig iron are firmer, and the market situation is improved, except that labor again is threatening. The Berlin correspondent of IRON TRADE REVIEW reports that German mills have sold rails to South America and Java at £7 15s ($33.32). The car works at Hannover has taken an order for several thousand freight cars for China. More steel plants in the Ruhr have resumed operations.

Price changes in the British market noted this week bring the following products to the levels as quoted: Steel bars for domestic use £9 ($38.70); for export £8 15s ($37.63); English and Scotch beams for export £8 7s 6d ($36.01); galvanized sheets £18 ($77.50); tin plate £1 4s 6d ($5.27); east coast hematite £4 18s ($21.07); west coast hematite £5 5s ($22.58); furnace coke for domestic use £1 4s ($5.16).

Sterling exchange is figured on a basis of $4.30.

England and Continent Seek World Steel Trade

European Staff Special

LONDON, March 14.—Keen competition continues in European iron and steel export markets, although less than at the end of February. Belgian and French export prices are now about on a parity, German prices are somewhat higher, but all three are considerably below British prices. British basic open-hearth merchant bars are quoted at £9 per ton (1.73c per pound), while Belgian basic bessemer bars are quoted at £6 15s per metric ton (1.32c). Notwithstanding this disparity British producers maintain a good share of business with customers who are accustomed to their grade of steel and feel they can rely on deliveries.

It should be noted also that continental domestic prices have advanced considerably in March, domestic and export prices now having reached about the same level. Merchant bars are quoted around 690 francs (1.36c per pound) in France, 825 Belgian francs (1.30c) in Belgium and £7 (1.34c) in Germany, compared with an average of £6 15s (1.30c) for export. At the end of February the same commodity was 575 francs (1.04c) in France and 750 Belgian francs (1.19c) in Belgium. This strengthening of the continental markets is due to depreciation of the franc currency and increase in demand.

Continental competition on the British market is not much to be feared in certain commodities. French pig iron has been offered in England at 485 Belgian francs ($17) per metric ton f.o.b. Antwerp, and Middlesbrough iron prices have been forced down to meet competition.

Continental basic bessemer billets are used in South Wales for the manufacture of tin plate. Recent quotations were around £6 2s 6d (1.19c per pound). French and Belgian beams are not much in demand in England as they generally do not answer to British specifications, but plates are being bought on the Continent and can be obtained at about £7 15s (1.51c) as compared with the British price of £9 (1.73c).

It is reported that French basic bessemer pig iron has been sold in America at $24.75 per ton c.i.f. Atlantic port, duty paid. British hematite has been offered at £5 12s 6d ($24.19) c.i.f. Rouen.

Germany is competing heavily in wire products. German wire nails are quoted at about £13 (2.53c per pound) base, or £3 below English prices. Continental barbed wire is offered at £17 (3.31c) f.o.b. or about £4 under British prices. British makers are well placed with orders for galvanized sheets at £18 7s 6d (3.52c) as against £19 (3.65c) f.o.b. offered by continental makers.

The following table shows a comparison between British and continental export prices on various commodities.

	English	French	Belgian	German
No. 3 foundry pig iron, per ton..	$20.00	$17.50	$17.00	$20.00
Billets, per ton..	$32.20	$25.15	$24.50	$30.10
Rails, per ton...	$37.65	$28.00	$27.10	$30.90
Bars, per pound	1.72c	1.34c	1.32c	1.36c
Beams, per pound	1.63c	1.25c	1.25c	1.27c
Ship plates, per pound	1.72c	1.49c	1.49c	1.51c
Galvanized sheets per pound	3.52c	3.83c	3.57c	3.50c

Germany Books Heavier Steel Orders

European Special Service

BERLIN, March 14.—Wire mills are taking many export orders for nails and galvanized barbed wire. Producers at Danzig are sold up for a month on nails for British India and Hongkong. Business has been done at £15 f.o.b. (2.90c) for nails put up in 7-pound packets and £14 to £14 10s per ton (2.70c to 2.80c) for kegs. The latter is $5 a ton under the Pittsburgh base for wire nails. German barbed wire also has been sold for shipment to India and China, together with about 3000 tons for Brazil at £16 to £16 7s 6d per ton f.o.b. (3.10c to 3.16c). Sales at similar prices, which are about $13 a ton under Pittsburgh base, have been made for Cape Town and Port Elizabeth, South Africa. German wire mills are filled to the latter part of May. Oval steel wire for fencing has been sold to South America at £21 per ton f.o.b. (4.50c).

Few new contracts have been made with Japan but improvement is noted in business with England as a result of the reduction of the reparations duty from 26 to 5 per cent. German mills are giving better delivery than those in the Saar, Lorraine, and Belgium.

In the home market prices are ad-

Current Iron and Steel Prices of Europe

Last Reported Prices Converted into Dollars at Rates of Exchange March 31

British Market

Corrected to Date by Cable

Home Market Prices. Gross Tons at Works or Furnace

	$	£ s d
SEMIFINISHED STEEL		
Billets, soft steel	32.25	7 10 0
Sheet bars	32.25	7 10 0
Wire rods	47.30	11 0 0
FINISHED STEEL		
Steel bars, England, ⅝ to 3-inch	38.70	9 0 0
Steel bars, England, ⅝ to 3-inch, for export	37.63	8 15 0
Plates, ship, bridge and tank, England	40.85	9 10 0
Plates, ship, bridge and tank, England, for export	38.70	9 0 0
Plates, ship, bridge and tank, Scotland	40.85	9 10 0
Plates, ship, bridge and tank, Scotland, for export	38.70	9 0 0
Beams, England	40.85	9 10 0
Beams, England, for export	36.01	8 7 6
Beams, Scotland	40.85	9 10 0
Beams, Scotland, for export	36.01	8 7 6
Sheets, black, 24 gage	55.90	13 0 0
Sheets, black, 24 gage, for export	58.05	13 10 0
Sheets, galvanized, 24 gage	77.40	18 0 0
Rails, 60 pounds and over	38.70	9 0 0
Rails, 60 pounds and over, for export	36.55	8 10 0
Tin plate, base box 108 pounds	5.27	1 4 6
Steel hoops	51.60	12 0 0
Steel hoops, for export	47.30	11 0 0
PIG IRON		
Hematite, East Coast, Mixed Numbers	21.07	4 18 0
Hematite, West Coast, Mixed Numbers	22.58	5 5 0
Basic, Middlesbrough	20.43	4 15 0
No. 3 Foundry, Middlesbrough	19.35	4 10 0
No. 3 Foundry, Derby, Leicester, Nottingham	20.32	4 14 6
No. 3 Foundry, Northamptonshire	19.57	4 11 0
No. 3 Foundry, Staffordshire	20.21	4 14 0
No. 3 Foundry, Scotch	21.50	5 0 0
Ferromanganese, 76 to 80 per cent	73.10	17 0 0
COKE		
Yorkshire furnace	5.16	1 4 0
Yorkshire furnace, for export	5.59	1 6 0
Foundry	7.10	1 13 0
Foundry, for export	7.53	1 15 0

Where no separate export prices are given, same quotations apply to domestic and foreign business.

German Market

Prices Last Reported

PIG IRON

	$	Pounds per metric ton (2205 lbs.)
Hematite	23.87*	5 11 0
Foundry, No. 3	20.00	4 13 0
Stahleisen, Siegen	22.19	5 3 0
Foundry, No. 1	20.43	4 15 0
Luxemburg Foundry, No. 3	18.06	4 4 0
COKE		
Lower Silesian furnace	7.31	1 14 0
Lower Silesian foundry	7.74	1 16 0
SEMIFINISHED STEEL		
Billets		Nominal
Sheet bars		Nominal
Wire rods	35.05	8 3 0
FINISHED STEEL		
Standard rails	30.53	7 2 0
Merchant bars	30.10	7 0 0
Structural shapes	29.03	6 15 0
Ship plates	33.97	7 18 0
Medium plates, 3 to 5 millimeters	37.41	8 14 0
Sheets, 1 to 3 millimeters	39.56	9 4 0
Tin plate, per box of 575 kilograms	6.45	1 10 0
Plain wire	43.00	10 0 0
Bands and strips	39.56	9 4 0

All prices, f.o.b. furnace or works.

*German prices now are quoted in pounds, sterling.

French Market

Prices Last Reported

PIG IRON

	$	Francs per metric ton (2205 lbs.)
Hematite, Lorraine	28.76	520
Basic bessemer, Lorraine	22.67	410
Foundry, Longwy, No. 3, sand-cast	22.12	400
Foundry, Longwy, No. 3, chill-cast	22.67	410
Ferromanganese, 76 to 80 per cent	102.86	1,860
COKE		
French furnace	7.85	142
German furnace, f.o.b. frontier	7.94	143.5
French foundry	8.68	157
SEMIFINISHED STEEL		
Blooms	35.39	640
Billets	36.50	660
Sheet bars	38.16	690
FINISHED STEEL		
Standard rails	34.29	620
Merchant bars	40.92	740
Angles	39.26	710
Normal beams and profiles	39.26	710
Plates, ship and tank, 10 millimeters and thicker	43.69	790
Plates, bridge and tank, 5 to 10 millimeters	45.90	830
Sheets, black, 3 millimeters	48.11	870
Sheets, blue annealed, 2 millimeters	51.15	925
Shafting, cold-drawn, 40 to 60 millimeters	69.13	1,250
Bars, 2 per cent nickel steel	102.31	1,850

All prices, f.o.b. furnace or works.

Belgian Market

Prices Last Reported

PIG IRON

	$	Francs per metric ton (2205 lbs.)
Basic bessemer, Belgian	20.45	470
Basic open-hearth, Belgian	21.32	490
Gray forge, Belgian	20.88	480
Foundry, No. 3, Belgian	21.10	485
Foundry, No. 3, Luxemburg	21.10	485
Foundry, No. 3, Lorraine	21.10	485
SEMIFINISHED STEEL		
Blooms	28.93	665
Billets	31.10	715
Sheet bars	32.41	745
Wire rods	40.24	925
FINISHED STEEL		
Standard rails	30.23	695
Merchant bars	34.80	800
Normal beams and profiles	33.06	760
Plates, 5 millimeters and thicker	36.32	835
Sheets, black, 3 millimeters	38.06	875
Sheets, galvanized, 1 millimeter	92.44	2,125
Plain wire	60.90	1,400
Galvanized wire	73.95	1,700
Wire nails	63.08	1,450

All prices, f.o.b. furnace or works.

vancing and mill prices are now generally higher than those offered by merchants who have stocks of cheap Saar and Lorraine steel on hand. Engineering works are buying more steel and north German shipyards have obtained orders recently. A greater range of activity is prevented by shortage of funds and lack of confidence in the future owing to delay in the settlement of the currency and reparations problems.

Ruhr mills are appearing more frequently in the German domestic market. A large Berlin merchant recently bought 20,000 tons of Ruhr steel from the French liquidation commission. A Ruhr mill is offering 15,000 tons of bars on its own account. The Ruhr mills are operating at about 50 per cent of capacity and business is being held back more by lack of orders than by physical circumstances. According to French figures the output of steel in the Ruhr was 193,000 tons in the last half of January compared with 143,000 tons in the first half of January. Pig iron production is given as 300,000 tons for January.

Continent Adds Furnaces

Paris, March 19.—More blast furnaces are being lighted in France, Luxemburg and Belgium. This reflects the tendency toward increasing production. In Belgium, at the plants of the Usines d'Ougree-Marihaye, one stack was blown in March 7 by Prince Leopold of Belgium accompanied by several notabilities of the Liege province. This furnace, which is the first to be reconstructed of four, were destroyed during the war, has been christened *Prince Leopold*. One furnace has also been blown in at the Cockerill plant at Seraing, bringing operating units to six. Thy-le-Chateau and Marcinelle have each started a stack, each now having three furnaces operating.

In Luxemburg the Acieries Reunies de Burbach-Eich-Dudelange, known as the Arbed, have blown in one stack at Dudelange where six units are now blowing. In the Moselle district of France one unit has been started at the Thionville works where three furnaces are being operated.

Edward E. Maxson has been appointed a receiver of the International High Speed Steel Co., New York, in an equity proceeding. Liabilities of the company, which has a plant at Rockaway, N J., are listed at $114,034. The company is said to be solvent, but short of liquid assets.

Cleveland Cliffs Reports Gain in Earnings

Net profits of the Cleveland Cliffs Iron Co., Cleveland, were $3,092,114 in 1923 compared with $880,742 in 1922, according to the annual statement of the company. After paying $800,000 in dividends, the sum of $2,292,114 was transferred to surplus. Profit and loss surplus at the end of the year amounted to $22,246,022. Total resources were increased $4,166,520 to an aggregate of $71,117,010.

Inventories were reduced $805,979, cash was increased $191,093, investments increased $4,730,920, and accounts receivable were increased $526,949, the balance sheet shows.

In his statement to stockholders President W. G. Mather outlines various resources of the company which promise well for earnings in the future. He says in part:

"The company as a whole made excellent profits, and although this was due mainly to the iron mines and steamers, yet I desire to call your attention to resources which later will increase their contributions to the company's prosperity. These are:

"The Lake Superior & Ishpeming railroad, after many years of uphill work and small profits, has now begun to make substantial dividends.

"The Otis Steel Co., in which our stock interest is large, has just completed additions to plant which will add largely to its earning power.

"The Trumbull-Cliffs Furnace Co. will have its new by-product coke ovens in operation by July 1, thereby greatly improving its position.

"The Central Steel Co. will soon begin the construction of by-product coke ovens and an 800-ton blast furnace, which will consume 400,000 tons annually of our iron ore. This is a profitable and well managed concern, in whose common stock we have recently purchased a one-third interest.

"In addition to these active elements affecting income, there are very large acreages of undeveloped iron ore and timber lands owned in fee. Although this property is at present a clause of expense for taxes and supervision, its value is constantly increasing and it constitutes a reserve of large proportions."

Profits Are Increased

Buying in the steel trade is conservative but good business seems assured during the first half of the year according to Vice President C. E. Stuart of the Central Steel Co., Canton, O. The company reports a surplus before dividends of $2,006,953 for 1923. This was a substantial increase over 1922. After payment of dividends there was a final balance of $650,467. Payrolls in 1923 aggregated $7,436,421. The financial statement of the company shows current assets of $11,677,132 and current liabilities of $4,670,448. Net profits in January are reported at around $526,000.

Midland Steel Shows Net

The Midland Steel Products Co., Cleveland, which became operative June 1, 1923, as the result of a merger of the Parish & Bingham Co., Cleveland, and Detroit Pressed Steel Co., Detroit, reports gross earnings for 1923 of $1,634,838 and net earnings of $1,086,395. Both the Detroit and Cleveland plants are operating at capacity, according to President E. J. Kulas, and indications are that March production will be the largest in the history of the companies now comprising the Midland Steel Products Co. Officers and directors were re-elected at the recent annual meeting.

Sloss Earns More

Operating profits of the Sloss-Sheffield Steel & Iron Co., Birmingham, Ala., in 1923 were $3,773,876, the largest since 1920. After reserves for interest, taxes, depreciation and depletion, the company reported net profits of $2,491,019 available for dividends against $578,893 in 1922. The balance sheet on Dec. 31, 1923, showed inventories valued at $2,155,619 against $2,574,874 at the close of 1922, cash holdings of $833,019, against $659,794 and accounts receivable at $1,306,407, against $1,192,037. Gold notes payable totaled $4,777,000, against $5,103,000, and accounts payable $773,819, against $576,658.

Refractories Net Higher

The Harbison-Walker Refractories Co., Pittsburgh, for 1923 reports net profit of $4,358,708 after all expenses and reserves or taxes, against $3,037,333 in 1922. After reserves for depreciation and depletion there was net income of $3,651,583, against $2,479,539 in 1922. After common and preferred dividends there was reported a surplus of $1,968,098 in 1923 and the profit and loss surplus on Dec. 31, 1923, was $7,715,126. The balance sheet showed inventory valued at $2,332,153, against $1,951,849; accounts receivable, $2,724,517, against $2,830,403; cash amounting to $1,435,159, against $1,696,674 and securities valued at $4,120,038, against $1,853,406. Accounts payable amounted to $611,844, against $595,165.

Douglas Iron Works, Chicago, has increased its capital stock from $1000 to $25,000.

Lima Locomotive Co. Shows Surplus for 1923

The Lima Locomotive Works, Inc., Lima, O., reports gross income of $20,286,867 for 1923. This compares with $6,476,953 for 1922. The year's operations resulted in a surplus of $1,562,709 against a deficit of $144,750 in 1922. After all charges for expenses and reserves for depreciation, taxes and other accounts, there was reported net income of $2,402,605. The detailed statement of earnings for 1923 and 1922 follows:

	1923	1922
Gross income	$20,286,867	$6,476,953
Expense and depreciation	17,495,031	6,221,213
Operating profit	$2,791,836	$255,740
Other income	110,769	.....
Total income	$2,902,605	$255,740
Reserve federal tax	500,000	.....
Interest	.....	80,294
Net income	$2,402,605	$175,446
Preferred dividends	30,326	130,985
Common dividends	809,570	189,211
Surplus	$1,562,709	*$144,750
Profit and loss surplus	$4,015,876	$2,453,167

*Deficit.

American Steel Foundries Has Its Best Year

The largest profit in the history of the company has been reported by the American Steel Foundries for 1923. Net profits for 1923 after all deductions were $7,595,944 compared with a previous record of $5,025,666 in 1917. In 1922 the company earned $3,111,949. The balance sheet shows net current assets of $23,900,797 against net current liabilities of $3,766,645. In his statement to stockholders President R. P. Lamont said:

"Within the last few weeks there has been marked improvement in the buying of equipment, and if several large items under consideration materialize into orders we may by the beginning of the second quarter again be running at a good rate with enough orders on the books to justify hope of a fairly good year.

"There was expended for repairs and maintenance and charged to operating costs $3,762,458, and for additions to properties and equipment $1,137,427. The latter figure includes purchase during the year of plant and business of the Damascus Rake Beam Co. of Cleveland."

Erie Bolt Earns More

The Lake Erie Bolt & Nut Co., Cleveland, reports net earnings for 1923 totaled $88,270. This compares with $10,337 for nine months of 1922 after April 1 when the company was reorganized.

Current assets total $1,071,911 compared with $373,785 of current liabilities. It is pointed out that on Dec. 31 tangible assets, exclusive of plants and other property, exceeded debts by $698,126.

Steel Imports Up, Exports Drop

Increased Buying of Foreign Pig Iron and Rails Sends Import Total to Highest Point Since August 1923—Exports Decrease Sharply from 251,284 Tons in January to 168,191 Tons in February

INCREASED buying from foreign countries of pig iron, tubular products and rails sent the import total in February to 42,054 tons, the highest monthly figure since August 1923. Exports totaling 168,191 tons showed a drop of 93,093 tons from the high level of January with 251,284 tons. January's total was swelled appreciably by shipments of sheets and tin plate to Japan and exports of the latter product were maintained in good quantity in February. Steel sheet exports dropped from 49,946 tons in January to 8080 tons in February but tin plate shipments were 25,443 tons in the former month and 21,854 tons in the latter. Shipments of heavy rails also were in large volume in February, totaling 26,153 tons as compared with 31,551 tons in January.

IMPORTS AND EXPORTS
Gross Tons

	1924		1923	
	Imports	Exports	Imports	Exports
Jan.	26,677	251,284	120,080	124,444
Feb.	42,054	168,191	67,707	155,182
March	.....	.....	106,206	165,624
April	.....	.....	77,909	179,159
May	.....	.....	75,891	204,988
June	.....	.....	68,019	172,747
July	.....	.....	53,448	170,259
Aug.	.....	.....	45,432	163,010
Sept.	.....	.....	36,612	173,664
Oct.	.....	.....	29,884	154,079
Nov.	.....	.....	26,534	186,770
Dec.	.....	.....	27,012	179,215
Totals	68,731	419,868	734,734	2,009,141

Year	Imports	Exports
1922	712,895	2,005,100
1921	135,825	2,150,276
1920	421,274	4,934,087
1919	322,264	4,397,295
1918	169,110	5,338,019
1917	330,201	6,465,053
1916	328,965	6,110,732
1915	282,396	3,532,564
1914	289,775	1,549,554
1913	317,260	2,745,635

Among the few iron and steel products exported in greater quantity in February than January were: Pig iron, scrap, semifinished, iron bars, hoops, bands and scroll, plain structural shapes, welded galvanized pipe, malleable iron pipe fittings, and horseshoes. Shipments of steel bars, wire rods, boiler plate, other plates, black iron sheets, cold-rolled strips, and horseshoe nails and other iron and steel products were approximately the same in tonnage for February as for January.

A general falling off in shipments of various classifications of wire and wire products contributed to the lower export total for February. Plain wire shipments dropped from 3886 tons in January to 1779 tons in February; galvanized wire dropped from 5536 tons to 1961 tons, barbed wire from 5817 tons to 5338 tons, wire nails from 9593 tons to 1385 tons, and smaller decreases were noted in woven wire fencing, wire cloth and screening, wire rope and cable, and insulated wire and cable. Welded black pipe exports also dropped, 5507 tons being shipped in February as compared with 10,365 tons in January.

Exports of ferrosilicon increased from 66 tons in January to 320 tons in February while exports of ferromanganese and spiegeleisen fell from 1005 tons to 2 tons.

Imports of tubular products in February showed the largest proportionate increase, 4383 tons being received during that month as compared with 27 tons in January and 215 tons in February, 1923. The only products on the iron and steel import list to decrease in February receipts from those of January were: Flat wire and strip steel, wire rods, sheets and saw plates, structural shapes, bar iron and scrap. The greatest drop was in wire rods, the February total being 648 tons as compared with 1303 tons in January.

Ferromanganese imports increased from 1913 tons in January to 2908 tons in February and ferrosilicon receipts from 1120 tons to 1940 tons.

Imports of all iron and steel products for the eight months ended February, 1924, totaled 282,639 tons, considerably under the aggregate for the like period ended in 1923 when receipts amounted to 765,420 tons. Imports of 476,774

IRON AND STEEL EXPORTS
Gross Tons

	—February—		Eight months ended February	
	1924	1923	1924	1923
Pig iron	4,773	2,786	26,058	22,402
Scrap	10,378	2,647	63,687	23,675
Semifinished	7,898	7,733	61,080	68,763
Iron bars	813	1,447	4,872	**4,747
Steel bars	8,938	14,228	92,669	**25,620
Alloy steel bars	197	53	1,677	1,896
Iron and steel bars	....	....	.....	*71,919
Sheet and tin plate bars	1	3	40	136
Wire rods	3,565	1,624	32,040	11,454
Boiler plate	373	2,482	9,497	5,043
Other plates	8,282	8,014	55,786	53,976
Galv. sheets	6,227	10,379	65,858	63,233
Steel sheets, black	8,080	8,367	141,196	60,250
Iron sheets, black	565	698	8,085	6,754
Cold rolled strips	831	1,096	6,141	4,699
Hoops, bands and scroll	2,892	2,138	17,946	18,833
Tin and terne plate	21,854	5,607	119,488	42,723
Struct. shapes, plain	4,809	8,652	68,612	65,730
Struct. shapes, fabricated	1,032	1,932	23,193	14,957
Ship and tank plates, punched and shaped	179	121	1,572	1,718
Metal lath	154	56	1,260	82
Other struct'l forms	3,934	2,713	32,423	43,874
Rails over 50 pounds	26,153	14,853	192,605	131,574
Rails under 50 pounds	1,349	1,374	17,606	17,279
Rail joints, etc.	2,713	792	18,923	13,114
Switches, frogs, etc.	454	458	4,552	4,537
Railr'd spikes	402	526	6,032	5,157
Railr'd bolts, nuts, etc.	....	189	1,879	1,571
Boiler tubes	1,033	1,475	10,849	9,487
Casing and oil line pipe	9,225	3,625	58,168	33,324
Welded black pipe	5,507	5,608	52,812	42,440
Welded galvanized pipe	3,098	1,502	21,529	21,013
Malleable iron pipe fittings	776	420	**4,475	4,680
Cast iron pipe	2,289	890	**8,068	4,350
Cast iron pipe fittings		773	**6,902	7,010
Plain wire	1,779	2,347	25,257	22,920
Galvan'd wire	1,961	2,833	29,735	31,715
Barbed wire	5,338	4,069	42,493	50,039
Woven wire fencing	155	264	22,983	1,985
Wire cloth and screening	87	112	1,520	1,183
Wire rope and cable	261	755	3,322	3,701
Insulated wire and cable	116	100	925	682
Other wire	809	1,115	8,904	9,736
Cut nails	158	191	978	1,659
Wire nails	1,385	2,131	37,869	20,003
Horseshoe nails	71	90	627	582
Other nails	376	351	3,589	2,587
Bolts, nuts, rivets, etc.	1,209	1,124	11,931	12,157
Horseshoes	176	90	721	814
Other iron and steel	5,214	4,376	42,796	42,500
Ferromanganese and spiegeleisen	2	6	2,086	386
Ferrosilicon	320	39	709	512
Total	168,191	135,254	1,474,025	1,111,181

**Beginning Sept. 22, 1922.

CASTINGS AND FORGINGS EXPORTS
Gross Tons

	February		Eight months ended February	
	1924	1923	1924	1923
Iron castings	910	843	6,771	6,641
Steel castings	677	123	3,852	1,151
Car wheels and axles	1,017	1,547	14,763	10,808
Iron and steel forgings	161	211	1,675	1,383
Total	1,123	1,123	12,123	12,123

FERROALLOY EXPORTS
Gross Tons

Ferrosilicon	320	39	709	512
Ferromanganese and spiegeleisen	2	6	2,086	386
Tungsten, manganese and other ores	79	41	882	*60
Ferrotungsten, tungsten metal and wire	...	...	2	...
Ferrovanadium	...	...	17	10
Other ferroalloys	2	5	4	14

tons of pig iron and 118,491 tons of scrap during the latter part of 1922 were responsible largely for the high total in the 1923 period.

Manganese ore imports in February totaling 9747 tons dropped sharply from the 19,981-ton figure for January. Shipments for the eight months ended February, 1924 aggregated 153,171 tons as compared with 130,868 tons for the like period ended February, 1923. Iron ore imports in February totaled 115,039 tons as compared with 114,599 tons in January.

To Remodel Troy Furnace and Build Coke Ovens

The Troy Coke & Iron Corp. has been organized under the laws of New York state to take over the blast furnace of the Burden Iron Co. and remodel it and to erect a by-product coke oven plant on a site immediately south of the plant of the Burden Iron Co. The coke oven plant will be erected by the Foundation Co., New York. The articles of incorporation were signed by James A. Burden of the Burden Iron Co., John W. Doty, of the Foundation Co., and E. Arthur Tutein of E. Arthur Tutein, Inc. Those three interests, and the Oliver & Snyder Steel Co., Pittsburgh, it is announced will back the new company. The Oliver & Snyder Co. is the owner of an extensive acreage of coal lands in Fayette county, Pa. The capital stock of the new company consists of 30,000 shares of preferred stock of $100 par value and 1000 shares of common stock of no par value and it is expected that the number of shares of common later will be increased. It is anticipated that the improvements will cost upward of $4,000,000 and it is expected that bonds will be issued to assist in the financing.

The directors of the company include James A. Burden, I. Townsend Burden and William E. Millhouse, all of the Burden Iron Co.; Henry Oliver and John Jenkins, of the Oliver & Snyder Steel Co., Pittsburgh; Franklyn Remington, John W. Doty and Alexander Murray, of the Foundation Co., New York, and E. Arthur Tutein of E. Arthur Tutein, Inc., Boston. Officers of the company are to be elected later.

ORIGIN OF FERROMANGANESE AND MANGANESE ORE IMPORTS

Gross Tons

Manganese ore from:	Feb., 1924
Brazil	2,843
Chile	228
British India	1,359
Total	4,430
Ferromanganese from:	
France, including Luxemburg	14
Germany	86
England	2,808
Total	2,908

ORIGIN OF PIG IRON IMPORTS

Gross Tons

From:	Feb., 1924
France, including Luxemburg	1,345
Germany	275
Sweden	74
England	8,344
Scotland	1,130
Canada	3,111
British India	1,103
China	100
Total	15,482

IMPORTS OF VARIOUS ORES AND FERROALLOYS

Gross Tons

	February		Eight months ended February	
	1924	1923	1924	1923
Ferromanganese	2,908	7,741	46,658	34,810
Ferrosilicon	1,940	1,494	7,440	12,112
Manganese ore	4,430	3,159	153,171	130,868
Tungsten bearing ore	....	....	.....	1,297
Nickel ore	469	357	3,919	2,442

IRON ORE IMPORTS

Gross Tons

From:	—February— 1924	1923	Eight months ended February 1924	1923
Spain	10,883	47	98,065	50,711
Sweden	13,901	34,004	268,328	327,333
Canada	112	123	11,369	2,010
Cuba	35,614	33,339	410,342	425,788
French Africa	12,720	16,200	247,868	128,871
Other countries	41,809	59,989	533,605	341,981
Total	115,039	143,702	1,669,577	1,276,694

IRON AND STEEL IMPORTS

Gross Tons

	—February— 1924	1923	Eight months ended February 1924	1923
Pig iron	15,482	35,793	99,707	476,774
Ferromanganese	2,908	7,741	46,656	34,810
Ferrosilicon	1,940	1,494	7,440	12,112
Scrap	5,207	13,686	56,181	118,491
Bar iron	314	85	579	7,446
Steel ingots, bars, etc.	3,749	2,057	20,798	18,682
Structural shapes	1,006	468	9,043	74,177
Rails	4,741	1,828	20,594	**8,339
Boiler and other plates	522	5	2,569	**1,496
Sheets and saw plates	198	210	2,384	**677
Tin plate	65	2,889	726	5,618
Wire rope and insulated wire	90	27	649	211
Wire rods	648	547	3,911	2,289
Total	36,870	66,830	271,237	761,122

OTHER IMPORTS

Gross Tons

Tubular products	4,383	215	5,599	**1,448
Round iron and steel wire	402	333	2,239	**1,272
Castings and forgings	302	177	1,733	**696
Nails and screws	26	31	388	**349
Bolts, nuts, rivets, etc.	20	21	118	**85
Flat wire and strip steel	51	104	1,325	**448
Grand total	42,054	67,711	282,639	765,420

**Beginning Sept. 22, 1922.

Metal Products Gains

The surplus account of the Cleveland Metals Products Co. was increased in 1923 to $4,987,799 from $4,096,700 in the preceding year. The balance sheet of the company as of Dec. 31 last, shows cash of $51,033, against $17,599 at the close of the preceding year; marketable securities, $4,126,061, against $3,789,522 a year earlier, and total current assets of $8,509,151, contrasted with $8,492,230 on Dec. 31, 1922. Total current liabilities at the close of last year amounted to $2,097,531, compared with $611,137 in the previous year, leaving working capital at the end of 1923 of $6,411,620 against $7,881,093 at the close of 1922. During the year common stock outstanding was increased from $4,423,025 to $5,400,275, while preferred was decreased from $3,936,300 to $1,936,300. Total assets and liabilities amounted to $15,408,200 at the end of 1923.

Titanium Isolation Now on Commercial Basis

Isolation of titanium on a commercial scale has been made possible as a result of research work conducted for the past several years by Simon J. Lubowsky, research engineer of the Metal & Thermit Corp., New York.

DESTINATION OF EXPORTS

Gross Tons

Countries	Iron sheets black	Steel sheets black	Galvanized sheets	Plates not fabricated
Argentina	1	57	....	527
Australia	32	....	....	....
Brazil	111	18	....	210
British India	5	....	....	....
British South Africa	...	....	....	222
Canada	344	4,150	6,806	1,529
Chile	...	....	....	55
China	1	38	1,062	155
Colombia	3	....	....	164
Cuba	7	59	29	571
Central America	...	....	....	136
Dutch East Indies	...	....	....	61
Far Eastern Republic	1	....	....	....
Greece	3	....	....	....
Japan	20	3,159	60	464
Mexico	29	47	124	179
Norway	...	....	....	208
Netherlands	2	....	....	....
Philippine Islands	1	19	17	904
Paraguay	1	....	....	....
Uraguay	2	....	....	....
Other Europe	...	....	....	178
Other South America	...	112	....	184
Other countries	...	422	51	430
South America	...	....	133	....

This metal, which heretofore has been obtainable only as a laboratory curiosity, is now to be had in commercial quantities.

The principle of this new method of isolation is applicable on a commercial scale to many of the rare elements, although Mr. Lubowsky has carried his work to completion only in respect to metallic titanium.

Mr. Lubowsky, who now is preparing a technical paper on his discovery to be presented shortly before scientific societies, is a graduate in chemical engineering of the Carnegie Institute of Technology, and has been connected with the Metal & Thermit Corp. since 1915. During the war he was in charge of the chemical work carried on by this corporation.

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Do-Nothing Congress Not Regretted

REGRET has been expressed frequently in the last few weeks that out of more than 50 recommendations for specific legislation sent by the President to congress last December, scarcely any substantial measures will be enacted in this session, which has become notorious as a "do nothing" congress from a legislative standpoint and as a tittle-tattle assembly from the public view. The fact that little legislation is to be accomplished by this congress perhaps should not be regretted or mourned.

About 10,000 bills are before the present congress, many of which would serve a far more useful purpose by being allowed to die in committee. The country has suffered in the past because of overdoses of unsound legislation from congress. Neither should business and industry be disturbed by the present activities of the "scandal school" in the senate. Why the strewing of sensational piffle should react against business is difficult to determine. To the 9,000,000 or more citizens of this country who own their own homes and the millions who have invested in commercial and industrial enterprises, the news of so-called astounding disclosures is not going to destroy their faith in government. Some radicals, naturally, are seizing upon this opportunity to denounce and thunder against organized government. The major activities of the government have been and are functioning in a sound and thorough manner.

Removals and resignations of cabinet members should have no general disturbing effects. Their departments will continue to function and they will be replaced by able men. The business public cannot afford to be disturbed by superficial upheavings at Washington. Some sort of tax reduction bill will be passed, the necessary appropriation bills to carry on the work of the government in the next fiscal year will be enacted, and then congress can go home. The executive and judicial branches of the government are functioning steadily, even though the legislative arm may have virtually collapsed.

May Test Trade Associations

MALLEABLE casting manufacturers constituting the majority of the membership of the trade association in this field and representing a large fraction of this important branch of the iron and steel industry, have been summoned by the government to defend in court their organized activities, by reason of individual indictments charging infraction of the Sherman antitrust act having been returned against 47 companies and directing officers at Cleveland last week. It is charged in the indictments that these various companies had entered into an agreement to eliminate competition among themselves as to prices, terms and conditions of sale. Pursuant to this agreement, it is declared, details of each member's business were collected by a central agency of the association and in turn distributed to the general membership. The allegation is made that the various defendants have assigned and allotted customers to one another to be held exclusively.

Representative members of the malleable association have strongly denied that they have entered into any agreement to allot customers; that they have fixed prices or have carried on any of the other organized practices which contravene the antitrust statutes. It is admitted that in the customary manner of trade associations, they have furnished pertinent statistics of their own business. The association, especially in recent years, has pressed its activities in the field of chemical and metallurgical advancement where its accomplishments in the interest of human safety and engineering progress have been notable.

Apparently, from the available facts, the malleable castings association in its general purpose and practices is not much different from the hundreds of similar organizations now operating in various lines of business and industry, the future existence and usefulness of which have been placed in uncertainty and confusion by reason of the weight attached to recent court decisions. But as has been previously pointed out, all these decisions have dealt with certain, defined activities conducted by these particular associations which either were questionable at best or manifestly were beyond

the pale of the law. The malleable case, hence may serve a good purpose in getting squarely into court for judicial review, these ordinary activities that law-respecting groups of business men have been carrying on and feel they should be allowed to promote, out of considerations of enlightened management and of public benefit.

It is known there has been hope in high government circles that some trade association case might be got into the courts free of the clearly objectionable methods pursued which has limited the significance of the recent decisions.

Slow Spring Market Factor

MAKERS of wire and wire products who had judged that spring demand for fencing and allied products would not be greatly disturbed by the general uncertainty that is halting business have encountred an unlooked-for adversary in the backward spring. Under normal circumstances, the farmer would have been a heavy buyer of fencing this spring.

But weather conditions have conspired to upset the calculation. As far south as Oklahoma snow has fallen recently. All through the great Mississippi valley snow and rain have combined to make country roads practically impassable. Even were the roads usable, fields are in such condition as to discourage all but the most hardy farmers. An immediate clearing up of this condition will stimulate buying by the farmers, but many farm improvements planned for this spring probably will have to lay over until fall.

With the farmer prevented from doing much of his spring buying the shock first jars the jobber. Fortunately for him, he has been keeping his stock down, aware that mills were able to give prompt delivery, and so he is the better able to absorb it. The saving grace for the mills is that while this work on the farms may be postponed it is not irretrievably lost and much of it will be done in the fall. Since farmer buying develops progressively from south to north as winter disappears, there is more hope for northern than for southern buying.

Efficiency Offsets High Costs

THE United States Steel Corp., last year was able to increase its net earnings per ton of finished steel produced by 34 per cent as compared with 1922. This achievement, revealed in the annual report of the corporation was made possible not only by better demand and output, higher prices, unhindered shipments, but by the enhanced productivity of labor. In 1923 the average output of finished steel per employe was 56.5 tons. In 1922 it was 54.8 tons and in 1920, 53.2 tons.

The output per man has been steadily rising in the last decade. The peak was reached in 1916 when under the war stimulation there was recorded 61.2 tons of finished steel for each employe. Before the war, the highest rate reached was 54 tons for each employe in 1913. The average rate prior to 1913 was approximately 48 tons. Thus in 1923 there was an increase in efficiency of about 16 per cent since the prewar years. This is largely due to the great strides made in recent years in labor saving methods.

The greater efficiency of production is being reflected in earnings. The net earnings per ton of finished steel in 1913 were only $11.17 and in 1907 the figure was $11.02, or about 14 per cent less than the $12.78 per ton earned in 1923. Although net earnings are higher, operating expenses have mounted enormously. The ratio of net earnings to gross receipts in 1911 and 1913 was 16 per cent and 17 per cent respectively. In the abnormal war year of 1916 the ratio rose to 27 per cent. In 1923, however, it fell to 11.9 per cent.

For many years to come the burden of taxes, of high wages and many other forms of cost will continue to make great inroads into the gross receipts of steel companies. The confronting problem of course, is to keep a restraining hand upon all outlay and to reduce the unit costs of manufacture through increased productivity and efficiency. That the United States Steel Corp. is alive to this necessity is plainly indicated by its appropriation of $90,000,000, the bulk of which will be spent for improving and modernizing plant capacity in 1924.

Metals Survive Speculative Flurry

THE world metal markets are just beginning to pull themselves together after the speculative collapse that took place beginning the middle of March. The quick rise in the French franc after the announcement of the Morgan $100,000,000 credit threw the European markets into a turmoil and the shock depressed prices in America as well. The decline started by selling on the part of German buyers, who had been using copper, zinc, lead and tin as a basis for bear speculation in francs. When the American plan to assist French exchange became accomplished francs appreciated rapidly and holders consequently were forced to liquidate their metal holdings, for they were caught both ways, between rising exchange and depreciating prices.

The flood of foreign selling now has subsided, but only after tin prices have broken some £55 in London and 9 cents in New York; copper dropped ½ cent in New York; lead lost its premium of 1 cent a pound in the outside market; zinc dropped ½ cent. The action of the market the last two weeks of March demonstrated that an important amount of the buying of February and early March in Europe was speculative and the decline of the last half of March seemed to liquidate the speculative holdings. April begins with market conditions more stable and with the world metal trade waiting the appearance of the Dawes report and its reception.

Current Statistics of Industry

Automobile Production in February Gains

Washington, April 1.—Production of automobiles in February totaled 367,435 passenger cars and trucks according to the department of commerce. This was a gain of 16 per cent over the January total and of 32 per cent over February, 1923, based on figures received from 186 manufacturers, 96 making passenger cars, 119 making trucks and 29 making both passenger cars and trucks. Data for earlier months include 12 additional manufacturers now out of business, while February data for 9 small firms were not received in time for inclusion in this report.

The record of passenger car and truck outputs follow:

	1924	1923	1922
Passenger Cars			
January	287,302	223,819	81,696
February	336,363	254,773	109,171
March		319,770	152,962
April		344,639	197,224
May		350,410	232,462
June		337,362	263,053
July		297,330	225,086
August		314,373	249,492
September		298,911	187,694
October		335,023	217,566
November		284,923	215,352
December		275,434	208,010
Total		3,636,767	2,339,768
Trucks			
January	28,846	19,720	9,576
February	31,072	22,161	13,350
March		35,260	20,022
April		38,056	22,640
May		43,678	24,097
June		41,145	26,298
July		30,663	22,046
August		30,829	24,692
September		28,638	19,462
October		30,166	21,795
November		28,070	21,949
December		27,720	20,354
Total		376,106	246,281

Furniture Sales Higher

Washington, April 1.—Shipments of steel furniture stock goods in February totaling $1,605,409 again showed an increase over previous months, being the largest monthly valuation since March, 1923, according to reports of the department of commerce based on returns from 22 manufacturers. The following figures give a comparison of values of shipments since January, 1922.

	1922	1923	1924
January	$983,834	$1,362,470	$1,592,338
February	967,125	1,307,173	1,605,409
March	1,087,228	1,709,206	
April	1,058,382	1,520,286	
May	1,056,735	1,506,072	
June	1,015,463	1,401,950	
July	945,768	1,247,605	
August	943,087	1,345,147	
September	1,062,495	1,273,259	
October	1,227,447	1,365,600	
November	1,204,310	1,339,425	
December	1,376,152	1,455,836	

The New York Air Brake Co., New York, in its annual report for 1923, reports net profits of $2,526,487, after charges and taxes, as compared with net profits of $958,741 in 1922, or $4.37 on common stock then outstanding.

Unfilled Orders Gain

Washington, April 1.—Unfilled orders of locomotives on Feb. 29, totaled 499 as compared with 376 in January, 387 in December, and a monthly average of 1592, according to reports of the department of commerce. Shipments dropped from 151 in January to 99 in February. Following is a comparison of the monthly averages of 1920 to 1923 and January and February, 1924:

Year and month	Shipments—Total	Shipments—Domes.	Unfilled orders—Total	Unfilled orders—Domes.
1920 monthly ave.	199	110	1,323	894
1921 monthly ave.	112	69	337	206
1922 monthly ave.	106	88	889	791
1923 monthly ave.	266	249	1,592	1,513
1924				
January	151	147	376	344
February	99	92	499	466

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Cast Iron Pipe Bookings Increase in February

Washington, April 1.—Production of cast iron pipe in February, totaling 78,962 tons, was lower than that of January which amounted to 81,431 tons, according to reports of the department of commerce. Shipments and bookings increased. Bookings in February were the highest of any month since the department of commerce started compiling these figures in June, 1923. The following figures include returns from 12 establishments with the exception of January and February when but 11 companies reported and are confined to bell and spigot pressure pipe.

	Produced tons	Shipped tons	Orders from stock tons	Orders from specifications tons
June	81,208	88,318	17,905	199,271
July	79,528	77,828	16,839	183,130
August	84,588	84,843	14,727	165,518
September	77,186	78,101	14,215	156,585
October	88,696	88,000	17,431	119,947
November	80,945	73,080	18,238	118,995
December	63,714	59,434	16,917	168,383
Totals for 7 months	555,865	549,604	116,272	1,111,829
Mo. av., June to Dec.	77,981	78,512	16,610	158,833
Jan., 1924	81,431	63,987	30,827	171,941
Feb.	78,962	69,399	37,285	182,649

Iron and Steel Companies Get Large Tax Refund

Washington, April 1.—Among the corporations sharing in the refund of tax payments by the treasury department for the fiscal year ended June 30, 1923, are a number of iron and steel metal and automotive companies. Among the concerns paid refunds are the following:

McKinney Steel Co., Cleveland, O., $952,045.16; Columbia Steel & Shafting Co., Pittsburgh, $121,811; Standard Parts Co., Cleveland, $187,795; Andrews Steel Co., Newport county, Ky., $656,954; American Steel Foundries, Chicago, $234,955; Camden Forge Co., Camden, N. J., $432,307; Alan Wood Iron & Steel Co., Philadelphia, $480,501; American Tool Works Co., $138,545; Pollak Steel Co., Cincinnati, $125,086; American Vanadium Co., Pittsburgh, $455,218; Latrobe Electric Steel Co., Latrobe, Pa., $249,248; Erie Forge Co., Erie, Pa., $344,137; American Brass Co., Waterbury, Conn., $766,275; Matthiessen & Hegeler Zinc Co., La Salle, Ill., $133,072; New Jersey Zinc Co., New York City, $1,148,296; Motor Products Corp., Detroit, $233,435; K. G. Roebling, executor of the estate of Ferdinand W. Roebling, $151,346. The total tax refund amounted to $123,992,820.94.

The Business Trend

April 3, 1924

BY JOHN W. HILL, FINANCIAL EDITOR

INDICATIONS are growing that the peak of the 1924 industrial activity is near. The arrival of belated spring may bring some temporary stimulation. The underlying trend, however, seems pointed toward a moderately lower level.

The evidence of this tendency is found in the abnormal rates of output in some lines early this year; in the weakening position of the automobile and building industries; in extraordinary business caution; in easier commodity prices, and in the downward swing of share values.

Some production curtailment would not be unfavorable. Large outputs this year apparently are being well absorbed by large consumption. However an unbalanced condition might arise, were the speed of output not abated. The lack of speculative buying should help industry keep its feet on solid ground.

Building has been running ahead of 12 months ago and has established new records for the season. In February the total of contracts awarded was 15 per cent ahead of February, 1923. Analysis of the figures, however, reveals that the gain was confined almost wholly to speculative residential construction in two cities.

In the automobile industry tremendous expansion of output has taken place this year. This was to provide for an expected huge spring demand. But spring demand is being delayed by weather conditions. Meanwhile stocks of new and used cars have mounted and costs are advancing.

Output is being curtailed until the riddle of spring buying is solved. Lower output will increase unit production costs and many motor car manufacturers may find profits elusive unless prices can be increased. In view of current competition price advances are extremely unlikely.

The great bulwarks of soundness in the situation are the continued heavy consumption of goods, the vast credit resources and prosperous railroads. Consumption is high because employment is widespread and wages are good. Heavy railroad buying continues an important factor in the outlook for the steel industry.

While goods continue to be consumed on a vast scale, business should remain active, despite cautious forward buying. This means that profits are to be found in quick turnovers rather than in holding goods for higher prices.

Credit is easy due to the continued heavy volume of gold imports. There is no likelihood of credit stringency or of sudden and drastic commodity or industrial deflation under present banking conditions. The federal reserve board in its annual report just made public clearly indicates that its policy is to be directed against swift liquidation.

The Barometer of Business

Weekly Comparison

	Last week	Week before	One mo. ago	One year ago	1913
Business failures..	431	392	328	380	...
Cash ratio Fed. Res. System %	80.8	80.8	80.6	75.5	...
Loan rate, 4-6 mo. N. Y. %	4½-4¾	4½-4¾	4½-4¾	5-5¼	5½-6
Aver. 25 industrial shares	$106.10	$110.09	$110.65	$116.03	$58.19
Aver. 25 railroad shares	$60.89	$61.65	$60.53	$65.06	$82.90
Aver. 40 bonds	$78.28	$78.50	$77.60	$73.42	$93.00
Car loadings, week ended March 15	916,505	929,505	906,489	904,116	*819,329
Bank debits, 246 cities (000 omitted)	$9,828,897	$10,106,951	$8,377,626	$10,096,386	.....

*1920

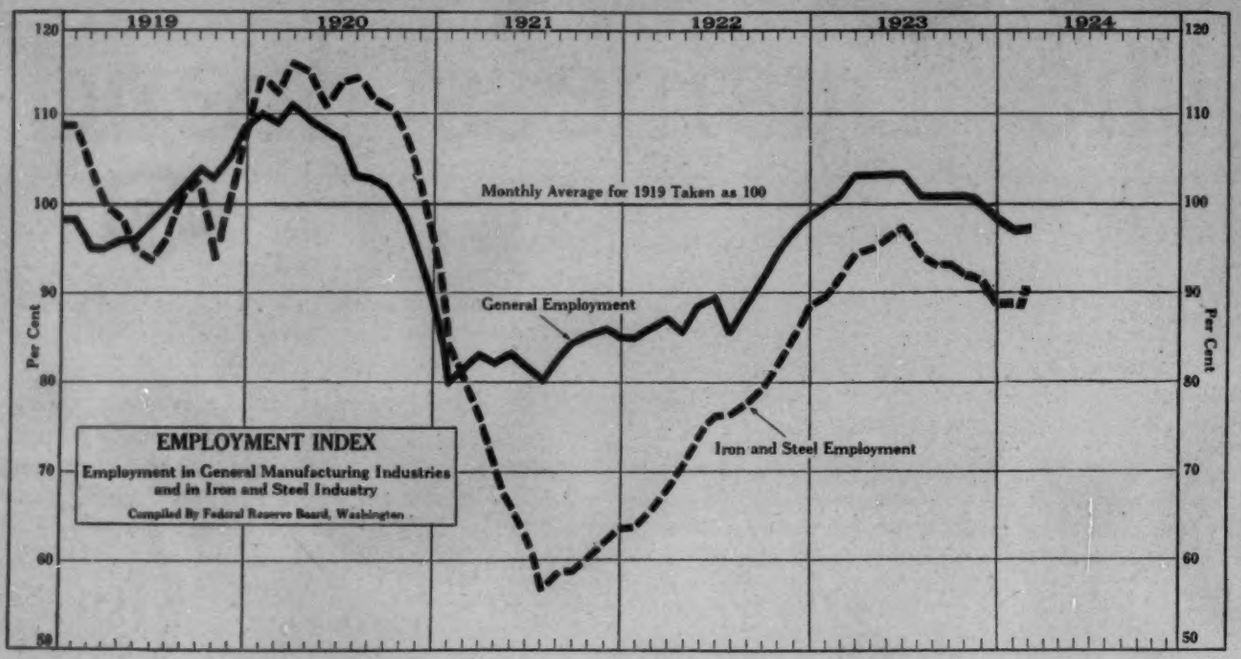
Foreign Exchange (Demand)

	Normal	Last week close	One week before	One month ago	One year ago
Sterling	$4.86	$4.29	$4.28	$4.29	$4.67
Francs	19.3c	5.46c	5.25c	4.18c	6.66c
Lira	19.3c	4.34c	4.31c	4.30c	5.02c

Monthly Comparison

	February	Month before	Year ago	Mo. average 1913
Dodge Building awards in 27 states (sq. ft.)	48,036,100	49,867,000	41,751,500	31,250,000
Business failures: Number	1760	2108	1508	1336
Liabilities	$35,942,037	$51,272,508	$40,627,939	$22,732,000
Exports	$367,000,000	$395,170,129	$306,957,000	$233,195,000
Excess of gold imports	$34,606,134	$44,993,832	$6,983,000	†$630,716
Bureau of labor price index	152	151	157	100
Bradstreet's price index	139.4	142.7	149.6	100
Economist's British price index	171.8	171.5	162.0	100
Nat'l Industrial Con. board living cost index	163.9	164.6	157.5	‡100
New incorporations	$661,048,200	$878,704,700	$700,708,300	$172,131,000
Railroad net earnings	§$51,281,000	$72,000,000	$51,128,970	$59,301,000

†Excess of gold exports. ‡July, 1914. §January.

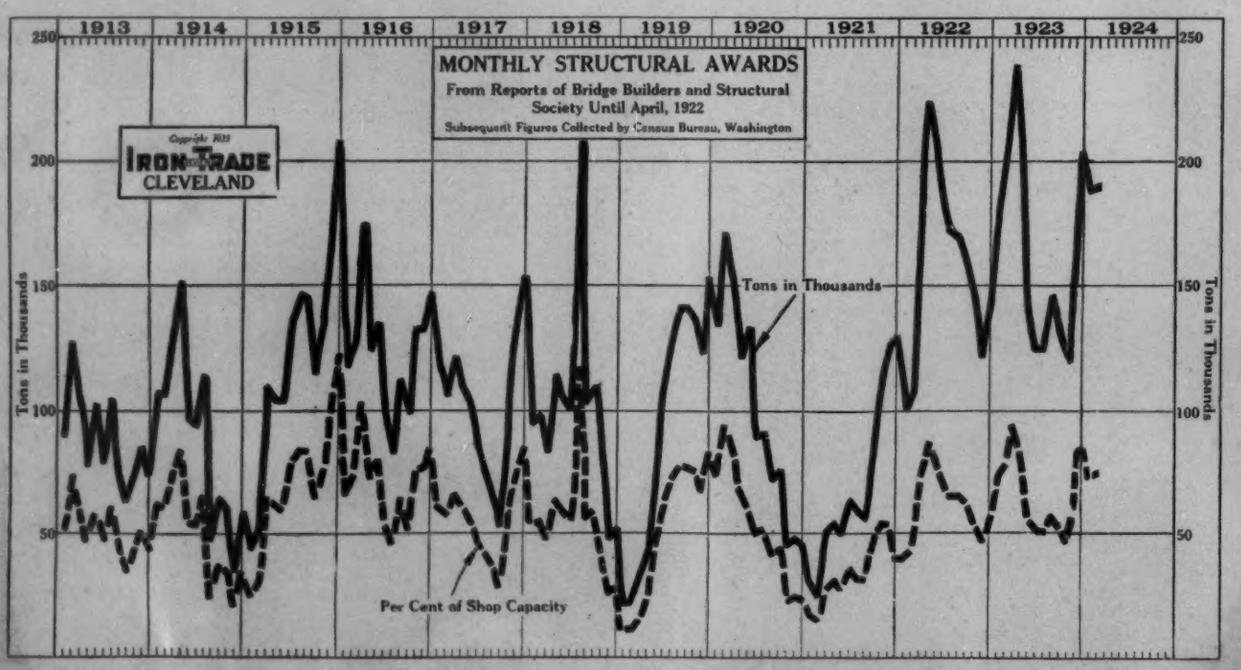


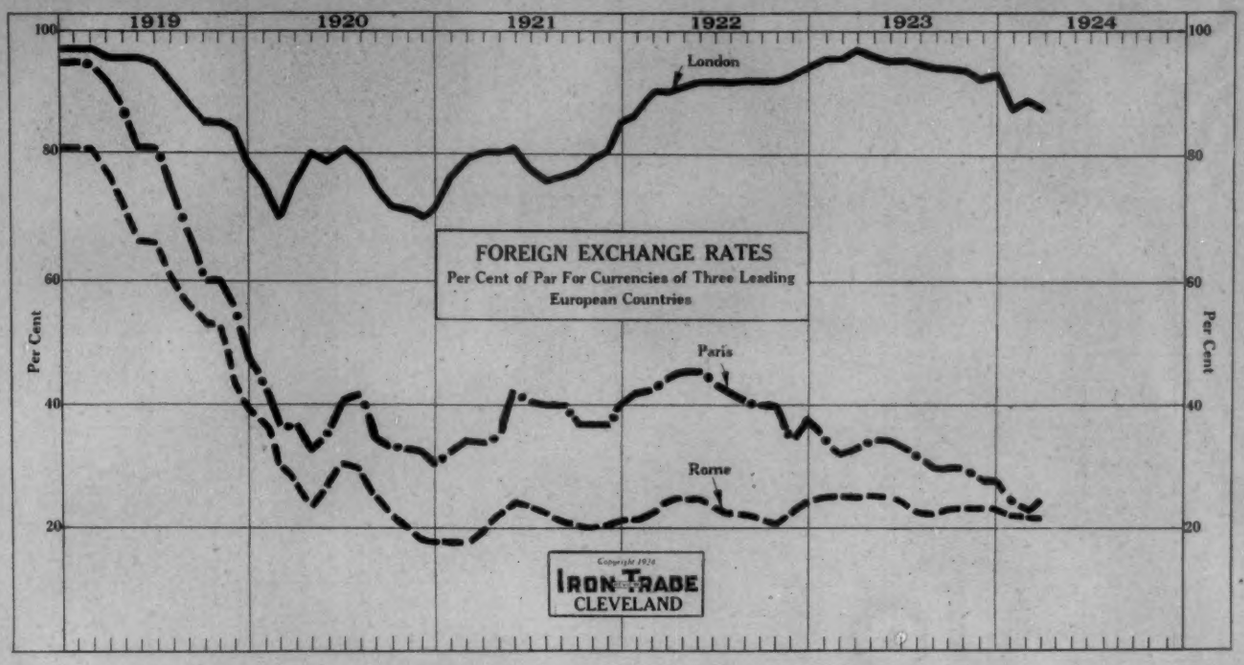
Employment Index

ACTIVE industrial operations in February are reflected by the gain in employment. General employment throughout the country increased from 98 per cent of the 1919 average to 98.8 per cent. It was below the 101 per cent of the 1919 average 12 months ago. The rapid gain in steel output resulted in a sharper upturn in employment for that industry than for general industry. The level in February was 90.4 per cent of the 1919 average against 89 per cent one month before. Greater efficiency is shown by higher outputs.

Monthly Structural Awards

STRUCTURAL steel awards have been encouragingly large this year. February bookings for the country were estimated at 189,800 tons. This was a slight gain over January. With the exception of the large December total, February's figure was the highest since last April. It compared with 202,800 tons in February 1923. The awards amounted to 73 per cent of shop capacity against 71 per cent in January and 78 per cent in February 1923. Bookings are showing a tendency to continue on a substantial scale.



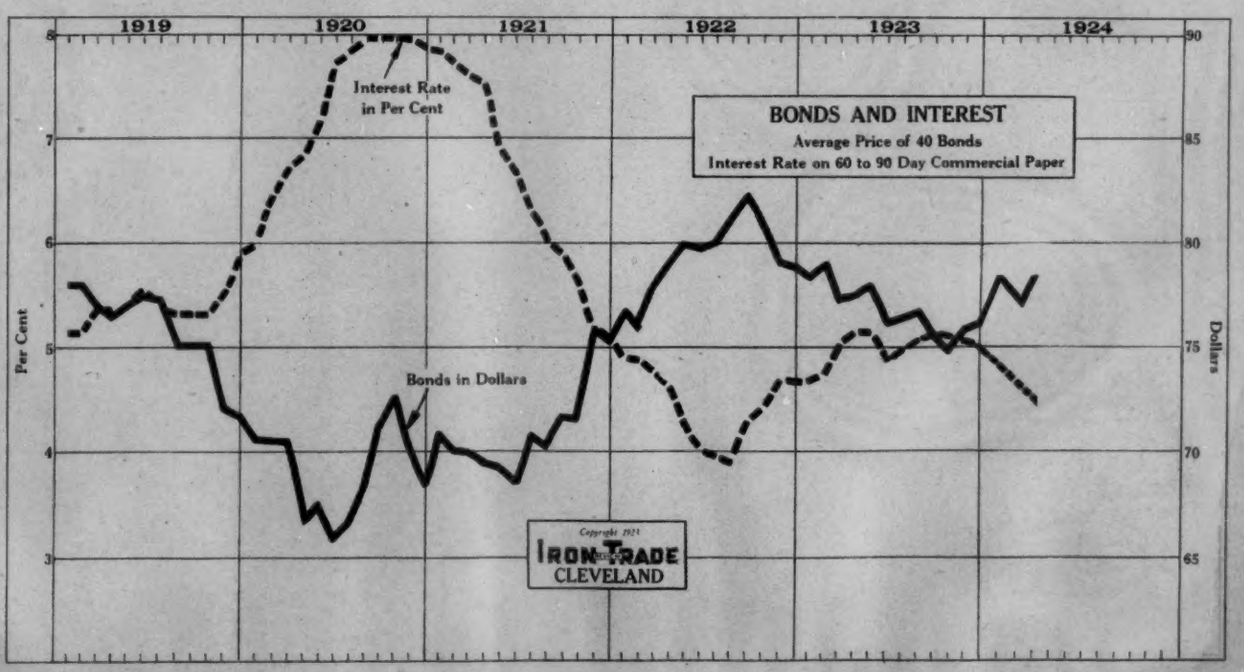


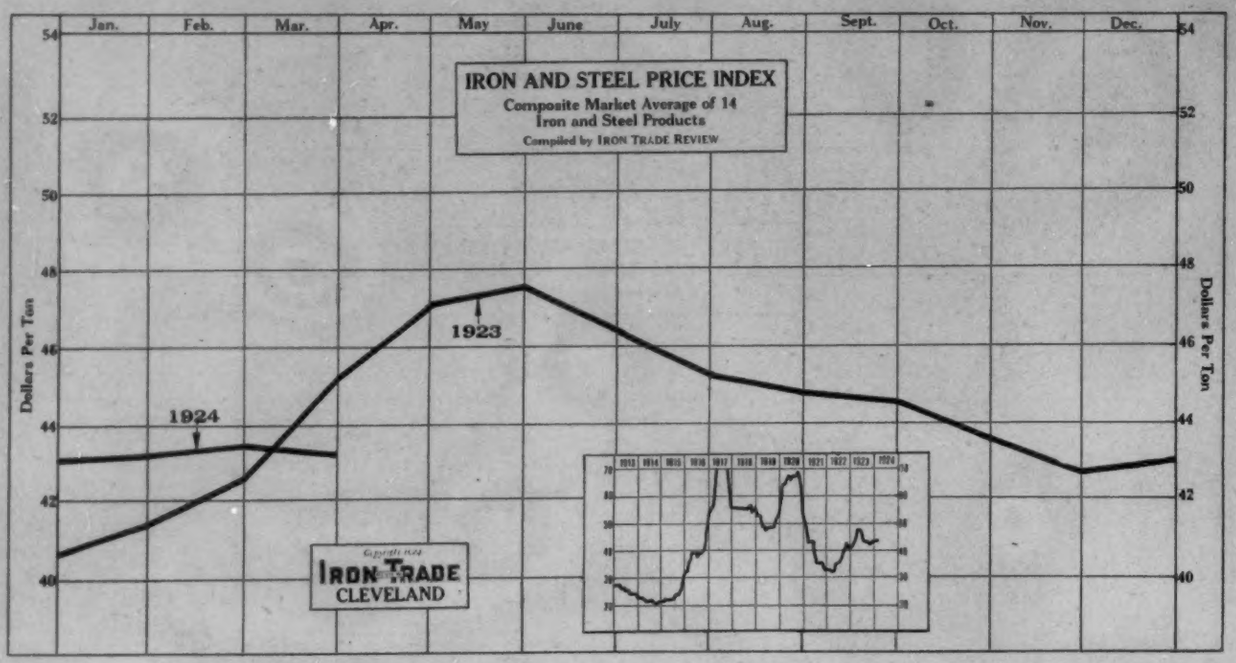
Foreign Exchanges

SPECTACULAR movements in French francs featured the foreign exchange markets in March. They were driven down by gigantic bear speculation on the basis of French financial problems. After a decline to about 20 per cent of par, a $100,000,000 loan to France by American bankers and a rigid program of economy caused the franc to advance more than 65 per cent within a short space. The outlook for European exchanges depends largely upon the success of the Dawes-McKenna committees reports.

Bonds and Interest

COMMERCIAL loan rates in March touched the lowest point they have reached at this season in six years. Mounting banking reserves, due to the $1,000,000 daily inflow of gold, and some slackening of the pace of industry, have eased money rates. The recent drop of call money rates in New York to 2 per cent was a passing condition due to concentration of government funds. With a large surplus of idle funds, banks are investing in bonds and they are rising. Despite cheap money, inflation is improbable.




IRON AND STEEL PRICE INDEX
Composite Market Average of 14 Iron and Steel Products
Compiled by IRON TRADE REVIEW
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.
Dollars Per Ton
1923
1924
IRON TRADE
CLEVELAND

Steel Prices

IRON and steel prices, measured by IRON TRADE REVIEW composite market average of 14 products, have diverged from the course they pursued early in 1923. Then they were advancing. This year they have held fairly stable, with a declining tendency in recent weeks. The rapid upswing of outputs, a high and an unhindered rate of shipments, combined with increasing restraint upon future buying have held prices in check. The future course of steel values depends upon the level of consumption among important users of steel.

Steel Price Parity

THE stability of finished steel prices has continued uninterruptedly since early last year. Steel bars, Pittsburgh, dropped below $30 a ton at the bottom in 1921. They advanced to a level of $40 a ton late in 1922. From that point they rose to $48 a ton, where they remain. Pig iron has fluctuated sharply in recent years. For two months, however, iron, basic valley, has held at $22 a ton. Lower raw material costs high output and diminished demand may result in lower iron quotations.

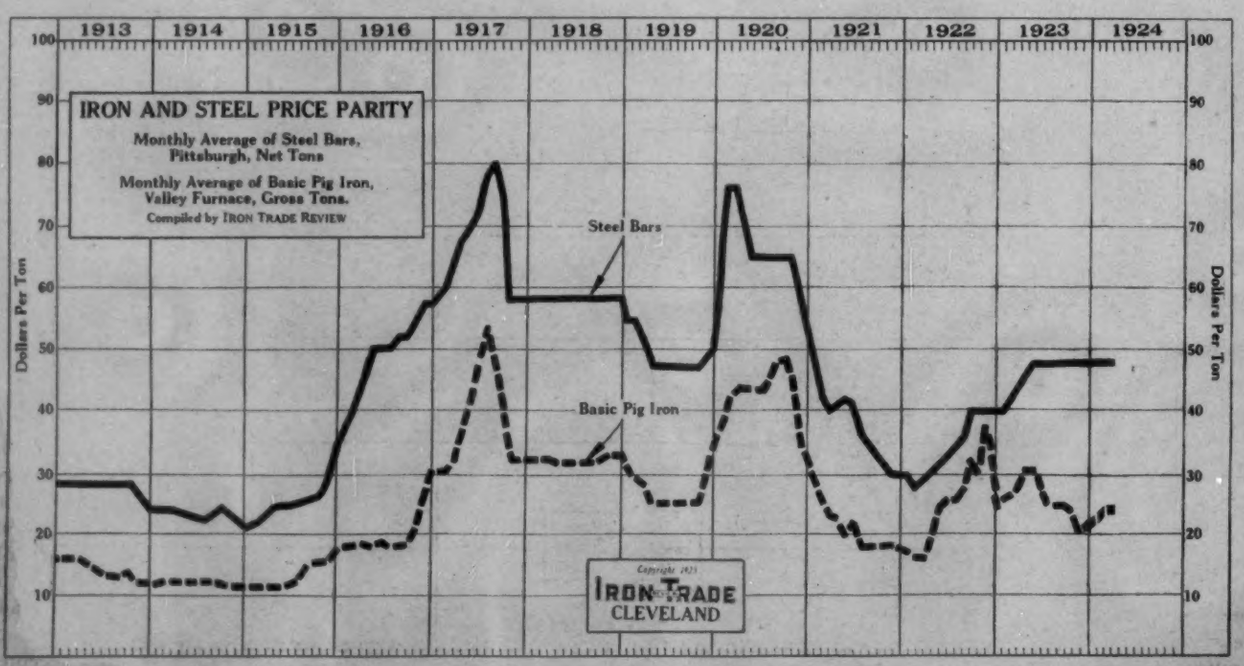

IRON AND STEEL PRICE PARITY
Monthly Average of Steel Bars, Pittsburgh, Net Tons
Monthly Average of Basic Pig Iron, Valley Furnace, Gross Tons.
Compiled by IRON TRADE REVIEW
1913 1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924
Dollars Per Ton
Steel Bars
Basic Pig Iron
IRON TRADE
CLEVELAND

Fig 1—General view of plant of Dibert, Bancroft & Ross Co., Ltd., New Orleans. The new building on the left is the steel foundry and the small office building is the metallurgical laboratory

Make Electric Steel in Louisiana

New Orleans Company Specializing on Saw and Sugar Mill Machinery Installs Acid Electric Furnace To Make Railroad Castings—Metallurgical Control Insures Uniform Quality of Metal Poured

UNTIL recently the scope of industrial activity in the state of Louisiana has been so limited that there has been little incentive for developing foundries and machine shops to the extent found in sections of the country where the manufacture of metal products is more extensive. In 1923 there were 36 foundries in the state, of which 15, or about 42 per cent were in the city of New Orleans. Nine of these 15 plants turn out gray iron castings and in six the product consists of brass and aluminum castings. Recently, however, New Orleans joined the ranks of cities in which electric steel castings are made. It acquired this distinction by virtue of a new steel foundry built by the Dibert, Bancroft & Ross Co., Ltd., which has been engaged in the general foundry and machine shop business for a quarter of a century. The new foundry is interesting, not only because it marks a new line of development in the foundry industry of the South, but also because in its equipment, methods of operation, extent of metallurgical supervision and quality of product it compares favorably with the leading foundries of the largest industrial centers of the North.

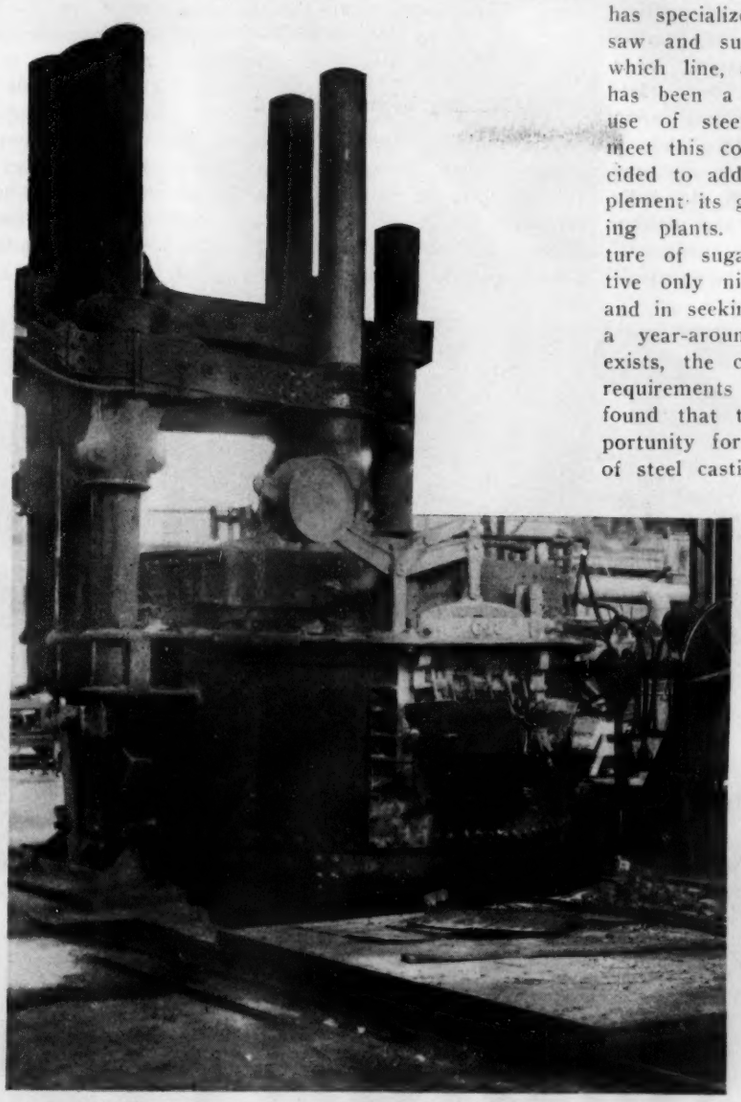


FIG. 2—A 3-TON ELECTRIC FURNACE FURNISHES HOT METAL

The Dibert, Bancroft & Ross Co. has specialized on the manufacture of saw and sugar mill equipment, in which line, as in many others, there has been a gradual increase in the use of steel castings. In order to meet this condition, the company decided to add a steel foundry to supplement its gray iron and brass casting plants. Moreover, the manufacture of sugar mill machinery is active only nine months of the year, and in seeking new markets in which a year-around demand for castings exists, the company investigated the requirements of the railroads and found that their needs offer an opportunity for a fairly steady tonnage of steel castings. As a result of this investigation the new foundry was built and equipped especially for the production of railroad castings. The steel is made in an electric furnace, made by the Pittsburgh Electric Furnace Corp., Pittsburgh. It has an acid lining and hearth, and while its rated capacity is 3 tons, heats as large as 18,000 pounds have been successfully made. Due to the operating and climatic conditions certain departures from usual practice are followed. The roof is made of first grade clay brick instead of the generally accepted silica product. In view

of the conditions, this roof gives good service, the average life being approximately 200 heats of about four tons each. Silica brick are used for the lining, their life approximating 500 heats. Bottom-pour ladles are used exclusively, castings of small size being stacked rather than being poured with shanks. The foundry is spacious and the arrangement of the melting, molding and cleaning equipment is well planned. The building consists of three bays, each 50 feet wide and 250 feet long. One contains the molding floor proper; the middle bay accommodates the core room, the acetylene burning and sprue cutting equipment; and the third bay serves as a floor for either cleaning large work or for molding side floor castings of small size, depending upon the rate of production of the shop.

FIG. 3—A CORNER OF THE FOUNDRY SHOWING A JOLTING MACHINE AT THE RIGHT AND ANOTHER AT THE EXTREME LEFT. RAILROAD CASTINGS ARE AN IMPORTANT PRODUCT OF THIS PLANT

The electric furnace is at one end of the molding floor, with the ladle room directly in front of the melting unit. To the rear of the furnace is the scrap pile, provision being made for a spur track directly under the crane so that all scrap can be handled readily by means of an electric magnet. At the far end of the molding floor is the shake-out pit, and the sand mixer, the latter being made by the National Engineering Co., Chicago. Along one side of the molding floor are three jolt machines, built by the Osborn Mfg. Co., Cleveland.

Molding Floor Classified

The molding floor is arranged in sections, each being devoted to a special class of work. A section is provided for car castings, one is for bolsters and similar work and another is devoted to the higher classes of quality castings, such as locomotive wheel centers, frames, etc. This arrangement aids in keeping check of the pour, and insures that the grade of metal called for will reach its proper destination with little chance of error during the casting period. The cleaning room is equipped with modern machinery consisting of sand blasting equipment, tumbling barrels, various sized swing grinders, stationary grinders, electric and acetylene welding apparatus, etc., shown in Figs. 5 to 8.

All work is handled either by crane or by trucks, the latter proving satisfactory for carrying castings along their route during finishing. The molding bay is served by two 10-ton electric cranes and the center bay by one 5-ton crane equipped with an electric magnet. Each molding machine is equipped with a 1-ton electric hoist to aid in handling flasks during molding. Two drying ovens for molds are provided, one having large enough to take railroad castings of any size. The smaller one is used

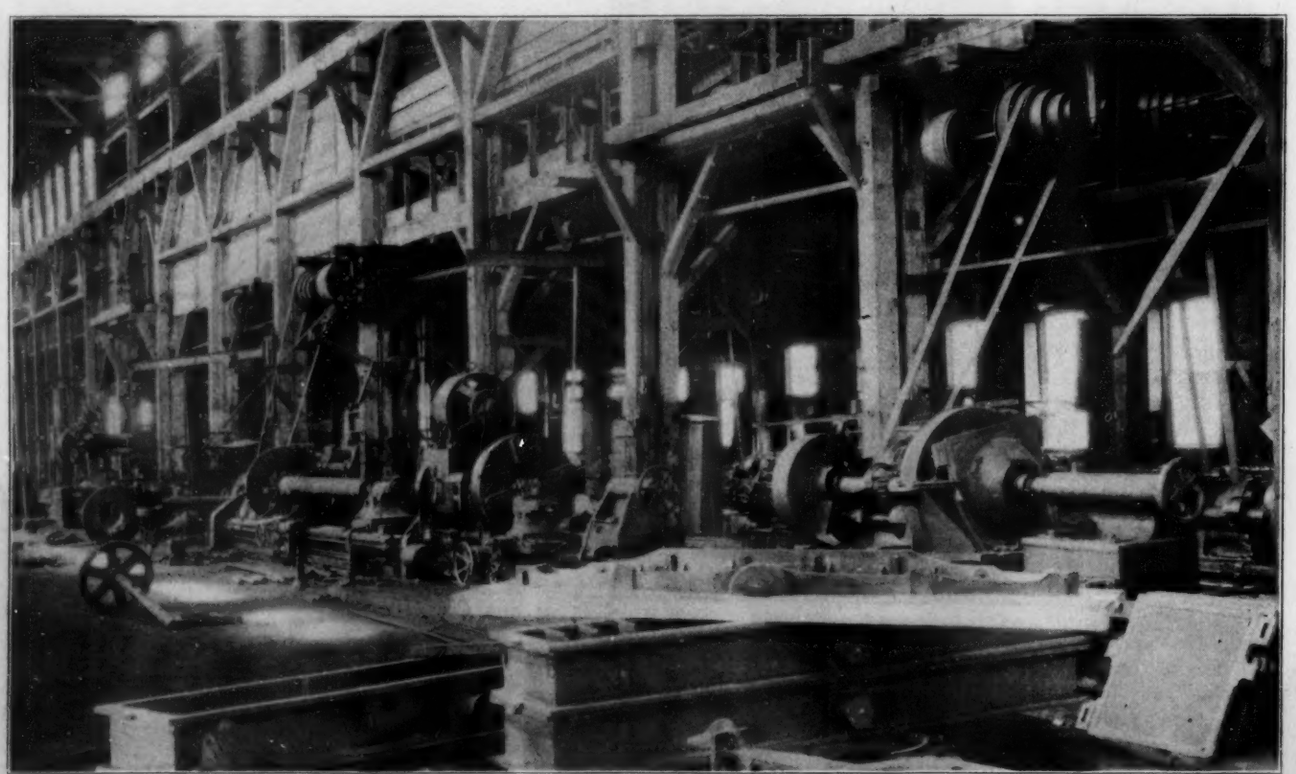


FIG. 4—MUCH OF THE PRODUCT OF THE COMPANY CONSISTS OF SUGAR MILL MACHINERY. AN EXTENSIVE MACHINE SHOP IS MAINTAINED IN ORDER TO FINISH THE CASTINGS FOR THIS INDUSTRY AND FOR RAILROADS

FIG. 5—(RIGHT)—A VIEW OF THE CLEANING DEPARTMENT SHOWING A TUMBLER AND GRINDING STAND. FIG. 6 (BELOW)—SWING GRINDERS ARE USED FOR TRIMMING HEAVY STEEL CASTINGS

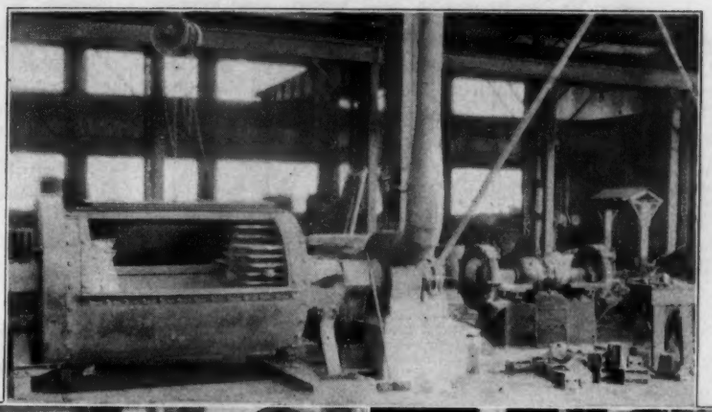
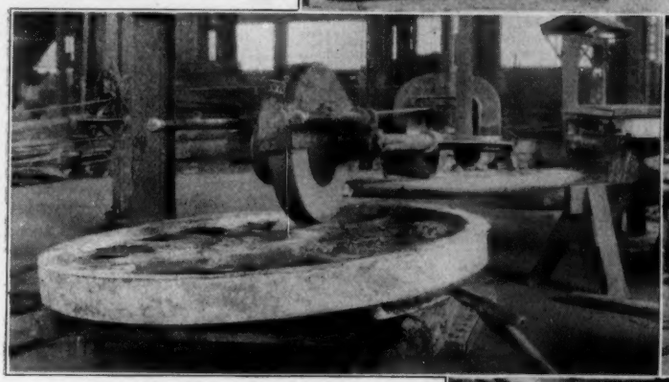
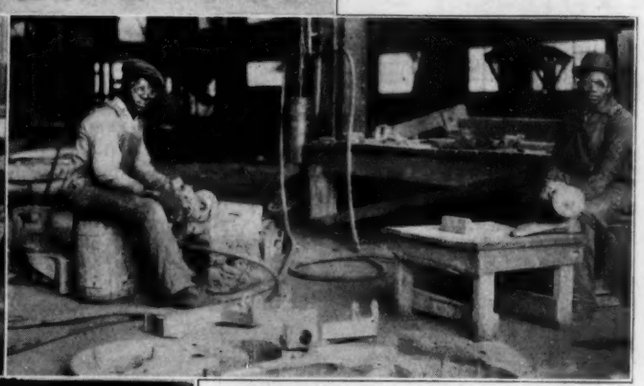
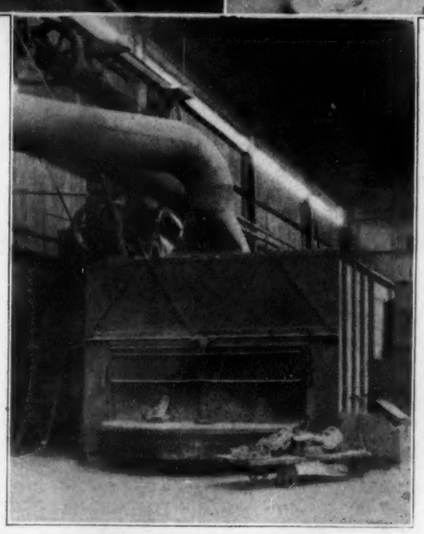


FIG. 7—(RIGHT BELOW)—SMALL PORTABLE GRINDERS ARE EMPLOYED FOR TRUING UP LOCOMOTIVE CASTINGS. FIG. 8 (CENTER BELOW)—A SAND BLAST UNIT CLEANS CASTINGS OF A WIDE RANGE OF SIZES







for core drying as well as small castings.

Considerable thought has been given to the economical production of steel castings of high quality. The problem required an effective plan of routing work, all details being under the direction of the metallurgical department.

In selecting scrap, only the highest grades of metal are purchased and care is exercised in determining the chemical and physical characteristics. The scrap must be of such size and physical character as to be easily charged and to melt down under the most favorable conditions. Its chemical composition is closely checked in a completely equipped chemical laboratory. After the scrap has been charged the same close chemical control follows throughout the course of the melt.

High Quality Is Sought

Care is taken during melting to obtain perfect conditions, slag control being exercised to the highest degree. A heat never is poured unless the melter is assured of its quality. On heats where there is the slightest doubt, common castings are poured, such metal never being cast into locomotive work. Alloys are added in the furnace and great care is taken to see that the pouring temperatures are right. This results in a freedom from cracks or scabbing in the finished work, the castings having a good appearance due to the careful adjustment of the metal. Aluminum never is used in any form, the company holding to the theory that a good steel requires no "dope." As many castings are machined in the company's own shop, an excellent opportunity is afforde ' to follow closely the behavior of the metal under the tool, which in the end is one of the best tests for a steel casting.

The performance of the furnace has been most satisfactory. Four heats are easily made in 8 hours, the average power consumption being approximately 565 kilowatt-hours per ton. The time for the actual running of a heat averages from 70 to 90 minutes, depending on the size of the heat. On special heats it has taken two hours and one-half for a 6-ton charge, and three hours and 35 minutes for a 9-ton charge. The average charge, however, is about 7000 to 8000 pounds.

From the furnace the metal is poured into the molds and as soon as the pouring is finished and the steel is set the molds are taken by the crane and shaken out in close proximity to the sand mixer, the flasks being returned to the molder. In this manner the floor is always kept clear, and a good turnover of equipment is assured. After the sand is freed in part from the castings, they are sent hot to the cleaning floor. On their way they pass the sprue cutter and the acetylene burner where the gates and heads are removed. The sprue cutter is able to cut a section up to two inches in thickness.

Cleaning Process Is Thorough

From this station the castings go to the sand blast, except certain classes of castings which go to the tumbling barrel. The tumbler holds approximately 100 center plates or similar castings and is equipped with a suction fan to draw out the dust. The sand blast has two rooms, one for small work, and the other for castings of larger size. From here the castings go to the chippers, then to the swing grinders, and as a final treatment are given a general going over with hand grinders. The work then is annealed and is ready to chip. While this extra cleaning costs a little more a ton of metal it has been found that this extra attention to the appearance of a casting pays large

dividends. The average customer places more faith on the appearance of a casting than on its chemical or physical qualities. That the quality of the work is high is shown by the exceeding small number of castings returned by customers, this amounting to under 100 pounds per 1000 tons of metal charged into the furnace.

Considerable experimental work is carried on by the metallurgical department covering new types of metal for certain classes of work, bettering the quality of the standard grades of steel and closely checking annealing and heat treating results. Several new steels have been developed for special work and are proving satisfactory under test. One is a metal designed to withstand high pressures while the other is a special gear steel used for driving wheels for heavy sugar mills.

In the one year this new foundry has been operating the output has been increased from nothing to over 300 tons per month, with the possibility of having to care for nearly 600 tons per month during the rush of the sugar mill season and possibilities of growth in tonnage are seen in other directions.

Approve Heat Treatment Definitions

CONFUSION which has arisen over the exact meanings of heat treatment terms some time ago prompted the American Society for Steel Treating to undertake the preparation of a standard set of definitions. Much work has been done by the recommended practice committee of the society in collecting and selecting from the mass of definitions in use those best fitted to become standard. This committee recently tentatively approved a set of definitions. These definitions are included in the following report:

During recent years, heat treatments have become more and more complicated and as a result there has arisen certain confusion in regard to the meaning of commonly used terms. For instance, in one locality or trade, any operation of heating and cooling resulting in a softening of the material is being called annealing, whereas in other places to "anneal" means not primarily "to soften" but to heat to above the "critical temperature" and to cool very slowly. Similar confusion as to the meaning and application exists in regard to other terms and as a result "annealing," "tempering," "normalizing," etc., are being used by different people to mean widely different things.

In any attempt to define accurately the terms commonly used in connection with heat treatment, the first question to decide and the most important one is; do the terms relate to the heat treatment operation itself or to the results obtained by the treatment? In other words, is the term indicative of the structure or the condition obtained or of the operation performed?

After careful consideration, it appears most logical and most in keeping with present day usage to have the terms so defined that they shall mean definite operations and shall not be considered as referring to the structures or general conditions resulting, although, in a great majority of cases, the structures or conditions resulting may be quite similar.

At first glance, it would appear entirely unnecessary to coin any new words. It seems, however, that one of the reasons for the confusion that has come to exist is the lack of adequate terms with which to express the different operations and conditions met with. In suggesting the use of the term "loneal," an attempt is made to relieve the term "anneal" of some of the misuse which it suffers and to eliminate the term "draw" which has such wide application in regard to the mechanical operations performed on metals as distinct from thermal treatments.

In commercial practice, the terms here defined will vary slightly depending upon the material under consideration. A "relatively slow rate of cooling" does not mean the same thing for an alloy steel as for a plain carbon steel, but the general meaning of the terms should remain the same regardless of material being treated. This must necessarily be the case if the term relates to the actual operation and not to the structure or the condition resulting from the operation.

Heatings and coolings, during any part of which steel is worked mechanically, are excluded from the meanings of the terms here given.

By "heating" as appearing below, is meant a thorough and uniform penetration of the heat.

By "critical temperature" as appearing below is meant that temperature which is customarily associated with the following phenomena:

1—Hardening when quenched.
2—Loss of magnetism.
3—Absorption of heat.
4—Formation of solid solution.
5—Pronounced refinement of coarse grain upon cooling.

Tentatively approved heat treatment definitions as prepared by the recommended practice committee are as follows:

Heat Treatment Definitions

1—ANNEALING. Heating above the "critical temperature" followed by a relatively slow rate or cooling.

2.—LONEAL. Heating below the "critical temperature" followed by any rate of cooling.

3—NORMALIZING. Heating above the "critical temperature" followed by an intermediate rate of cooling. (Note)—In good practice, the heating is considerably above the "critical temperature."

4.—SPHEROIDIZING. A long time heating at or about the "critical temperature" followed by slow cooling throughout the upper part of the cooling range. (Note)—For the purpose of spheroidizing the cementite in high carbon steels.

5—HARDENING. Heating above the "critical temperature" followed by a relatively rapid rate of cooling.

6—TEMPERING. Reheating after hardening, to some temperature below the "critical temperature," followed by any rate of cooling.

7—CARBURIZING. Adding carbon, with or without other hardening elements, such as nitrogen, to wrought iron or steel by heating the metal below its melting point in contact with carbonaceous material.

8—CASE HARDENING. Carburizing the surface portion of an object and subsequently hardening by suitable heat treatment.

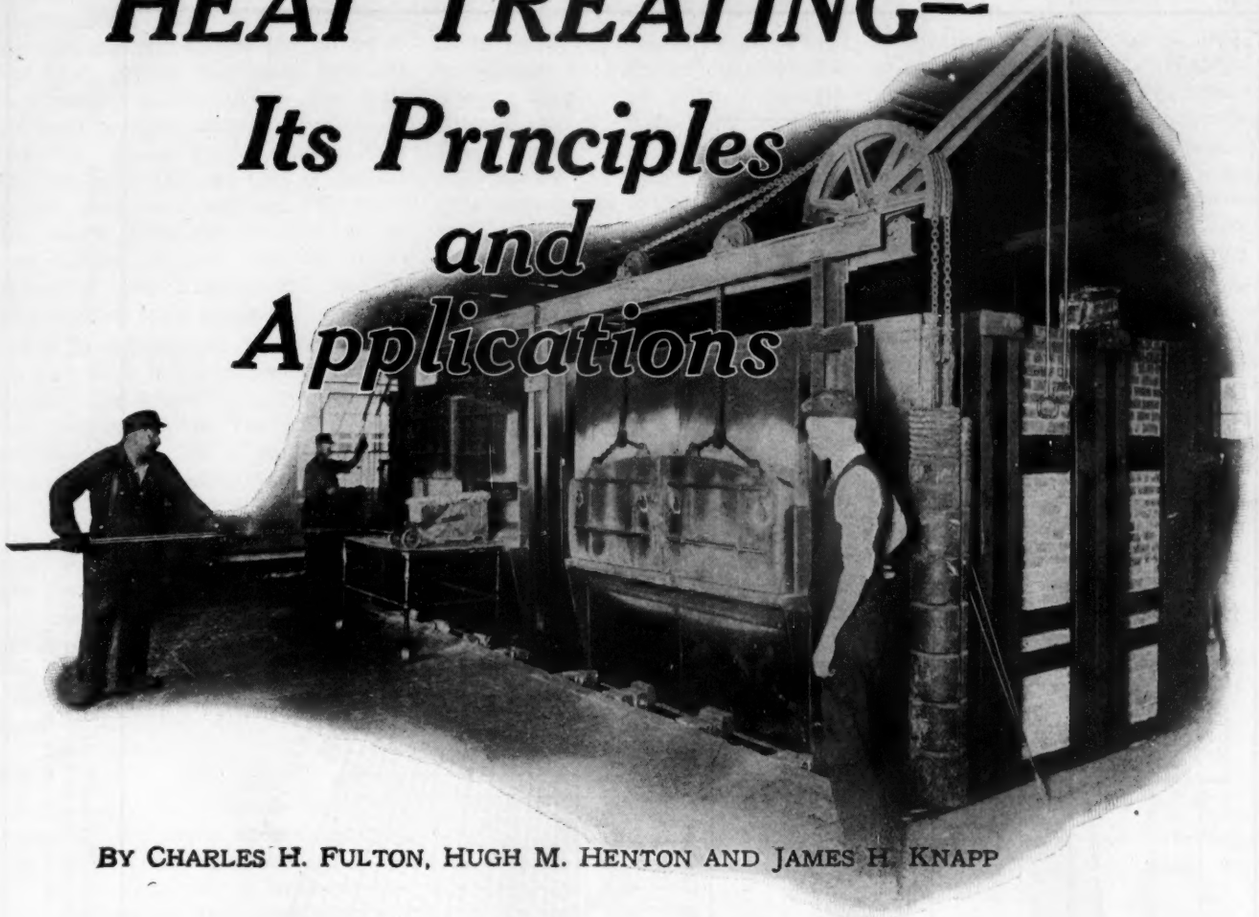
9—CYANIDING. A specific application of carburizing where the object, or a portion of it, is heated and brought into contact with cyanide salts.

New Apparatus Measures Strains Accurately

Measurement of strains, forces, displacements, and accelerations and indicating or recording of the results at some remote point has been made possible by a new electric telemeter developed by the bureau of standards, Washington. The gage of the instrument has two points which are clamped to the member on which the measurements are to be made, and two stacks of carbon disks. A change of load on the member causes a change in the distance between these points, and this is arranged to cause a change in the pressure on the carbon stacks and a consequent change in their resistance. The electrical apparatus for measuring and recording these changes can be placed at any convenient point, being connected to the gage by wires. Moreover, the apparatus will record extremely rapid changes. The recording apparatus can be used with several gages at once, as many as 12 gages having been used with a single recorder.

So far the device has been used for the measurement of loads in airplane stay cables during flight, measurement of strains in airship girders and bridge members during the construction tests, tests of bridge members subjected to live loading, tests of airship girders and bridge members in the laboratory, measurement of pull on dynamometer arms, and measurement of pressures ranging from a few millimeters of mercury to 40,000 pounds per square inch, with equal accuracy.

HEAT TREATING—
Its Principles and Applications



BY CHARLES H. FULTON, HUGH M. HENTON AND JAMES H. KNAPP

Chapter VI—Hardening and Tempering

IT IS hoped that the definitions given in Chapter IV have cleared away any confusion in terms, such as is usually found in the use of the terms hardening and tempering. The last is called variously "drawing the temper" or "the drawback" or simply the "draw," in shop jargon.

Steels above 0.3 per cent carbon are suited to these processes. They should be in a fine grained condition, either by reason of previous normalizing or because of forging necessary in shaping the tool or piece. If the structure is coarse, but not so much so that a separate treatment is necessary to refine it, the hardening heat itself will do the refining. Materials suitable for hardening and tempering include tools or parts forged and shaped all ready for the finishing touches of grinding and polishing, which can be performed afterward. Sometimes the grinding and polishing is done before hardening. This necessitates protection of the tools from scaling and disfiguration. This may be accomplished by a coating of fireclay. White lead also has been found helpful in certain cases.

Hardened steels cannot be cold worked or shaped, except by grinding on a good emery wheel. Often only parts of a certain tool need hardening while other parts are in the normalized or annealed condition. An 0.8 per cent carbon rock drill steel of 1¼-inch octagon is hardened at the bit, which is then tempered. The stem of the drill steel is normalized or annealed. The shank end which goes into the chuck of the machine drill is partially hardened to withstand rapid hammer blows.

Sometimes steels receive a hardening treatment for refining preparatory to normalizing or annealing, as brought out in the discussion of double treatment in Chapter V. It is essential here that we confine the term *tempering* to a proper reheating of a hardened steel, that is a reheat or "draw back" to below 450 degrees Cent. Reheating to a higher point gives a normalized or annealed structure depending upon the time and temperature of holding and rate of cooling.

As the hardening depends upon the arrest and holding of a steel in a state normal to higher temperatures, it is essential to know the amounts or percentages of the metallographic constituents—martensite or austenite, pearlite, excess cementite or excess ferrite. Fig. 50 affords a graphic method of obtaining these percentages. By diligent analysis of the diagram we can properly lay out a general control of hardening procedure. The

Begin New Chapter

QUENCHING, which is an important phase of hardening, is discussed in this, the first installment of Chapter VI. Chapter I of the series appeared Oct. 4; Chapter II was published in the issues of Oct. 18, Nov. 1 and Nov. 15; Chapter III in the issues of Nov. 29, Dec. 13 and Dec. 27; and Chapter IV in the issue of Jan. 10. Chapter V appeared in the Jan. 24, Feb. 7, Feb. 21, March 6 and March 20 issues.

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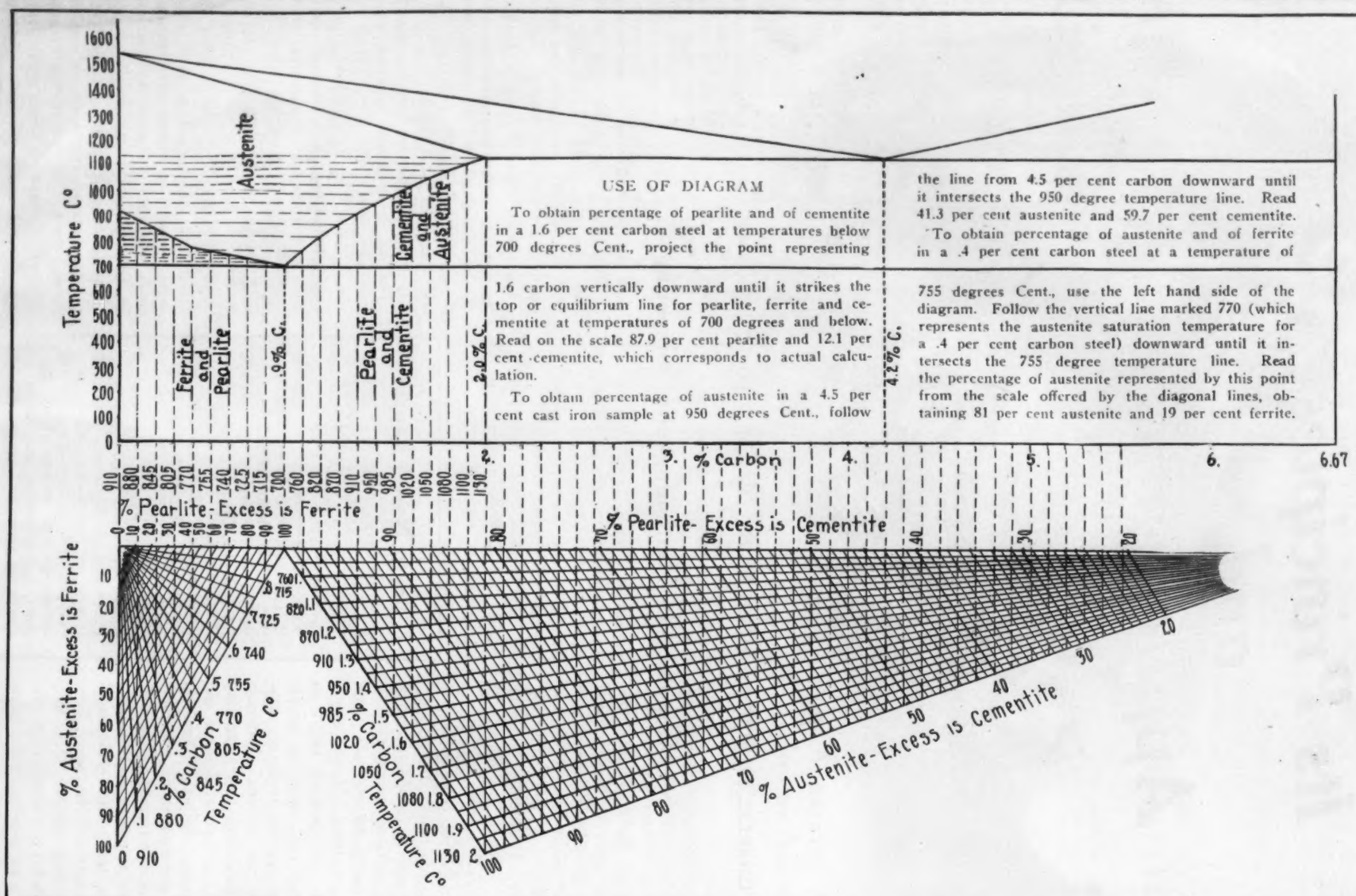

Temperature C°
Austenite
Cementite and Austenite
Ferrite and Pearlite
.9% C.
Pearlite and Cementite
2.0% C.
4.2% C.
USE OF DIAGRAM
To obtain percentage of pearlite and of cementite in a 1.6 per cent carbon steel at temperatures below 700 degrees Cent., project the point representing 1.6 carbon vertically downward until it strikes the top or equilibrium line for pearlite, ferrite and cementite at temperatures of 700 degrees and below. Read on the scale 87.9 per cent pearlite and 12.1 per cent cementite, which corresponds to actual calculation.
To obtain percentage of austenite in a 4.5 per cent cast iron sample at 950 degrees Cent., follow the line from 4.5 per cent carbon downward until it intersects the 950 degree temperature line. Read 41.3 per cent austenite and 59.7 per cent cementite.
To obtain percentage of austenite and of ferrite in a .4 per cent carbon steel at a temperature of 755 degrees Cent., use the left hand side of the diagram. Follow the vertical line marked 770 (which represents the austenite saturation temperature for a .4 per cent carbon steel) downward until it intersects the 755 degree temperature line. Read the percentage of austenite represented by this point from the scale offered by the diagonal lines, obtaining 81 per cent austenite and 19 per cent ferrite.
% Carbon
% Pearlite- Excess is Ferrite
% Pearlite- Excess is Cementite
% Austenite-Excess is Ferrite
% Austenite-Excess is Cementite
% Carbon Temperature C°

FIG. 50—IRON-CARBON DIAGRAM WITH SCALE FOR OBTAINING PERCENTAGES OF FERRITE, AUSTENITE, CEMENTITE, PEARLITE AND MARTENSITE AT VARIOUS TEMPERATURES AND CARBON CONTENTS—FROM ZAY JEFFRIES, CLEVELAND. METHOD OF USING THE DIAGRAM IS OUTLINED ABOVE

upper part is a simplified iron-carbon diagram; the lower part contains the graphic scale. Starting with the point representing the carbon percentage of the steel, project this point vertically downward until it strikes the scale marked "pearlite, excess is ferrite" or "pearlite, excess is cementite." Read on this scale the per cent of pearlite in the annealed condition; 100 minus this figure gives the per cent of excess ferrite, or per cent of excess cementite. See Chapter III for explanation of these terms.

The metallographist is able to check up the steel for homogeneity, carbon content, impurities, etc., by quantitative comparison of the actual with the theoretical. To go into metallography would be beside the object here; all that is intended is to point out the way for the purpose of the heat treater. If the microscope shows pearlite in a certain steel to be 40 per cent and the excess ferrite 60 per cent, then by the converse of the directions in the preceding paragraph we are able to say that the steel is annealed, and contains 0.36 per cent carbon.

To obtain the per cent of martensite possible by severely quenching austenite at a given temperature, follow the line from the known per cent of carbon down till it intersects the line representing the given temperature. From this, follow the slant line to the lower scale where the per cent of austenite at the quenching temperature is shown. The per cent of martensite is the same; 100 minus this figure gives the per cent of ferrite in excess if any or the per cent of cementite if more than 0.9 per cent carbon.

The diagram can be used for determining constituents, as before mentioned, in white cast irons as well as in steels, but the utility of hardening and tempering is limited to the latter class of alloys, that is, to those containing 2 per cent or less carbon.

Furnaces for hardening and tempering heats may be the same in design as those for annealing, but generally hardening furnaces are designed for higher temperatures to take care of special alloy and high speed steels. Tempering furnaces usually attain lower maximum temperatures as a "safety-first" against over-heating.

Pyrometer Control Is Important

All furnaces should be controlled by pyrometers of the thermocouple type. It is preferable to have all readings on the instrument scale expressed in millivolts. Then by means of a chart similar to that shown in Fig. 51, millivolts can be converted to degrees of the temperature scale. This method avoids the error often made when one couple is substituted for another of different thermoelectric power. Couples of different metals, either base or noble, can be used. Each couple can be marked with a tag showing the proper curve to read. If a temperature scale on the instrument is used, whenever the couple is changed for another of different potential per degree temperature, then the temperature must needs be corrected, an item generally overlooked in practice. For Fig. 51, 20 couples were calibrated and found to conform to curve No. 3, while 12 others corresponded to curve No. 2, and 16 couples from another melt of noble alloy all check with curve No. 1.

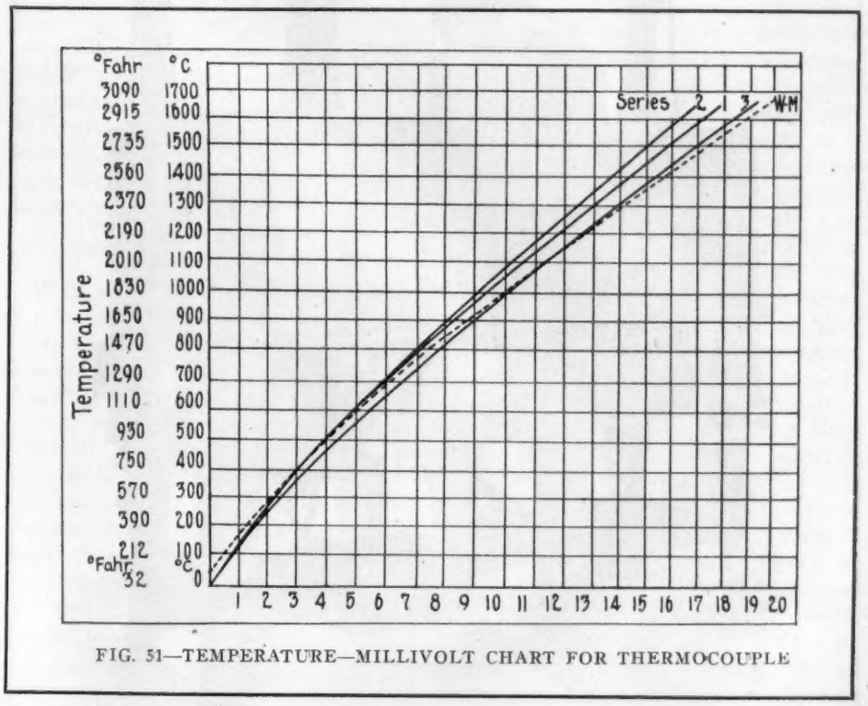


FIG. 51—TEMPERATURE—MILLIVOLT CHART FOR THERMOCOUPLE

To use this chart find the number of millivolts registered on the instrument, project vertically upward to the curve for the thermocouple then horizontally to the left scale where read degrees in either Centigrade or Fahrenheit.

The logical place for the couple in hardening furnaces varies according to the shape of the furnace and the space required for manipulation of the pieces being hardened.

Small tools and those needing hardening on one end or in one spot may be heated by a blacksmith forge which usually has fireclay hearth tile upon which a temporary enclosure of firebrick can be placed, or a special forge designed for tool dressing work can be used. The latter can be designed as a muffle furnace, getting away from the danger of excessive carburization. It affords a considerable saving in fuel as compared with the open forge.

Although the forge fire is crude in a way and inaccessible readily for pyrometer placement, it has some advantages. Some high carbon steels are decarburized by muffle heating, and thereby partially lose their hardening power; this is prevented in the forge by cautious regulation of air and oil so that a slight excess of fuel is present. Over excesses of fuel cause a carburization, and possibly a sulphurization which leads to brittleness. The tools often are dressed and shaped and hardened in one heat, although this is not good practice for important pieces. The broad tile hearth of the forge is low and convenient for handling the work, and has the convenient quenching bath of water or oil or both, situated at the end. No time is lost in moving the piece from the fire to the bath.

Oil, water or lead ordinarily are used as quenching media. Water is the oldest and cheapest, but oftentimes is too severe in quenching effect, and causes cracks. This phenomenon occurs in high carbon steel, say 0.8 to 0.9 per cent and upward. It often is the fault of the heating furnace when steel cracks on hardening. The heat may be unevenly distributed to various points on the tool part to be hardened, causing cracks.

A good furnace for general hardening heats is shown in Fig. 52. It has a three-chamber arrangement. One chamber may be used for preliminary heating, say from room temperature up to 650 degrees Cent.

(1200), another may be for a heat of 800 to 900 degrees Cent. (1562), while the third may have a possible maximum of 1500 degrees Cent. (2732). Each chamber heats evenly. The high temperature chamber should be equipped with a carborundum hearth as fireclay hearths do not stand up under these temperatures.

From this furnace, tools heated just above the critical range, as shown by Fig. 50, are quenched in a large bath of water, if severe treatment is desired. For a less severe hardening, oil may be employed. Lead is used

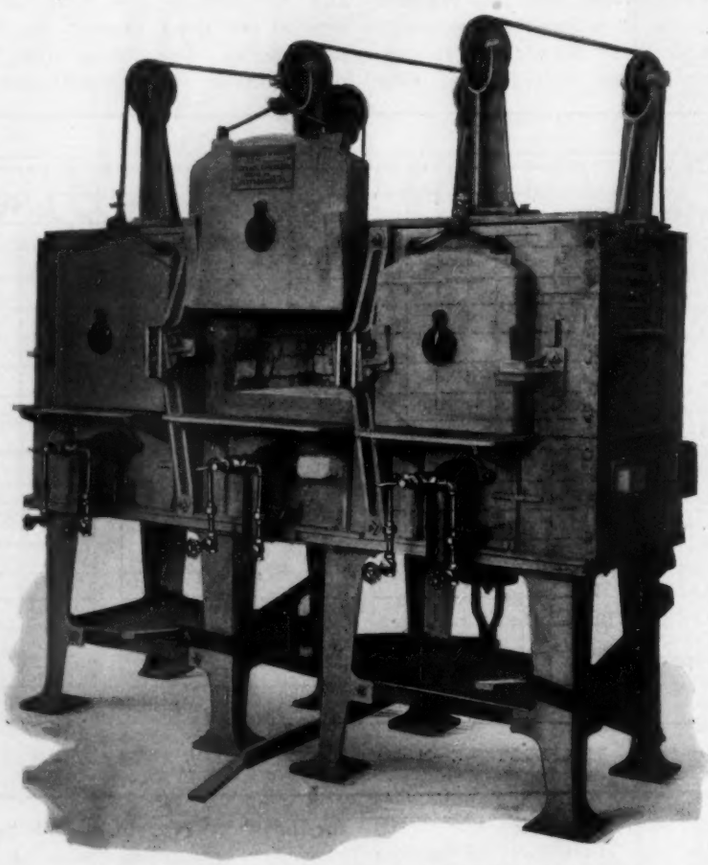


FIG. 52—A THREE-CHAMBER HARDENING FURNACE

for a still milder quench; for instance, for high speed steels quenched from 1200 down to 700 degrees Cent. (1592 to 1332). Lead covered with charcoal to prevent litharge forming, can be used for temperatures from 400 up to 700 degrees Cent. (752-1332). Some arrangement must be made to keep the work immersed as iron and steel floats on the heavy lead.

Lead baths also are used for uniform heating before quenching, for tempering some special alloy steels, and for normalizing previously hardened steels. Lead has a tendency to stick in small crevices and narrow slots, as between the teeth of small gears or in screw threads. This often can be prevented by coating the part with cyanide. Dip in a water solution of the latter, and thoroughly dry. Lead baths seldom are installed for the single purpose of serving as quenching vats, but are sometimes so used when already installed for heating and tempering. This is because the amount of steel quenched in lead or molten alloys of like temperatures is small, though important.

Water quenching baths should be of large size, and so placed that the work can be seen as it is quenched. One company places them with their tops on a level with the floor. Where large volumes of work are to be handled in a single bath, it is necessary that the water be changed rapidly or it will soon become too hot to be effective. Some plants pump the water through large sections of air-cooled coils, through outside water-cooled coils, or expose the warm water to the air by spraying and catching below. Thence the water returns to the bath and keeps up such a cyle throughout the day. The beginning of the day finds the water cooler, generally, than the end. *Very* cold water will crack most any steel high enough in carbon to harden quickly, so a general temperature between 20 and 30 degrees Cent. (68 and 86) should be constantly maintained.

Oil baths harden less intensely than water and in about the following order: petroleum, lard oil, glycerine, thin mineral oils, linseed oil, heavy cylinder oils. Generally, any cheap, free flowing mineral oil may be so adjusted in temperature as to cover all ordinary requirements. It is not necessary that an oil be obnoxious or foul smelling. While the oil is less harsh in hardening effect, it also can be used at higher temperatures than water, practice varying between room temperature and 100 degrees Cent. (212). Oils are poorer conductors of heat and are less harsh because they extract heat more slowly from hot steel. A circulating system is necessary for oil tanks if a constant temperature is to be maintained.

Large steel parts are quenched in oil after uniform heating to just above the critical temperature. In this case the hardening is milder than in the case of the rock-drill which was quenched in water. If we quenched the large piece in water, its greater mass would so affect the quenching rate, that portions would be cooled much faster than others, with an ever-increasing danger of cracking.

Solutions for quenching may contain all manner of ingredients. Water with common salt, caustic soda, sodium carbonate, manganous sulphate, or sulphuric acid, gives a solution of greater conductivity. If a large volume is maintained, such solutions will quench faster than water alone. Their specific heat or heat capacity per unit weight is less than water.

Where extreme severity is necessary, iced brine is used. Quenching in liquid air or other substances at temperatures far below 0 degrees Cent. (32) belongs only to the laboratory.

In the same way that the water and oil are circulated, all quenching solutions should be circulated or cooled systematically by some means, as they become heated in the course of the day's work. Corrosive solutions are hard to handle in pumping systems, so cold compressed air often is used for agitation and cooling. The operation should be conducted in a portion of solution separate from the quenching vat proper, as bubbles of air on hot steel cause soft spots.

An interesting combination of quenching methods is made by using oil layers on water. The oil film formed on the dry hot steel protects it to some degree at least from the severe quenching action of the water. Much attention should be given to the manner of plunging single pieces into the bath.

Export Markets Offer Opportunities to Tool Builders

Greatest Chance for American Participation Lies in Field Formerly Dominated by German Machinery Exporters and in Countries Now Undergoing Natural Expansion—American Exports of Metalworking Machines Now Below and Great Britain Above Prewar Levels

BY W. H. RASTALL

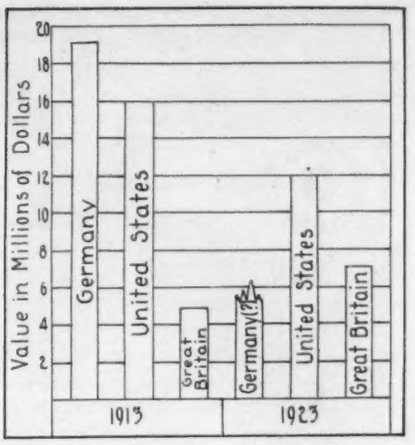


Fig. 1—Relative position of leading exporters of metalworking machinery in 1913 and 1923

PREVIOUS to the war, American machine tools were known throughout the world for their superior qualities, high efficiency, great productive capacity, ability to produce with precision parts which allowed scant tolerances, labor-saving features, and even automatic equipment for the production of intricate parts. Also in the prewar years competition in the world markets was met from manufacturers in Great Britain and Germany principally, although there were producers of lesser importance in a few other countries.

In 1913 the United States exported more than $16,000,000 worth of metalworking machinery, the United Kingdom exported less than $5,000,000 worth and Germany shipped from her borders nearly $19,500,000 worth of such equipment.

War Affected Industry

The war probably affected the machine tool industry as much or more than any other, and this is especially true as applied to the export situation. Machine tools were required for the production of an endless variety of commodities needed for military purposes. The allied blockade prevented the further export of such equipment from Germany even had the military requirements on this industry been such as to allow German exports to continue. A similar demand was felt in the United Kingdom, but strange as it may seem, statistics show that throughout the war exports continued at about the prewar basis. On the other hand, the entire world called upon the manufacturers in the United States for a greatly increased volume of machine tools, and its exports expanded rapidly from the volumes previously indicated to a total of nearly $85,000,000 in 1917. Upon the entry of the United States into the war about this time, it became much more difficult to handle the export trade, in part at least because of the export markets and licensing provisions that were put in effect. From 1918 the trade decreased to about $52,000,000. Following the armistice, it expanded again to about $59,000,000 in 1919, since which time further declines have occurred until in 1923 the export trade was about $12,000,000 or slightly under the prewar level.

German Situation Not Clear

With regard to German competition, it is difficult to present a concise statement that is fully satisfactory, largely because of exchange fluctuations. Returns on a tonnage basis are unsatisfactory because the machine tool manufacturer produces an article that can scarcely be described in terms of weight. However, it can be stated that during the war the German export trade was largely wiped out by the allied blockade. Following the armistice, an earnest effort was made by German manufacturers to recover their old position, but many circumstances make this difficult. In 1921 and 1922 it was felt that the depreciating mark gave German manufacturers a peculiar advantage in the world's markets for machine tools, and, to a certain extent, these influences continue even now. On the other hand, information reaching Washington indicates that these reports have been very greatly exaggerated and while it is entirely true in many instances that German machinery has been sold at prices 50 per cent or less than corresponding American quotations, the actual volume of German metalworking machinery shipped into the world's markets has not been large, at least not so much as many of the reports in the press would indicate. Late in 1923 the utter collapse of the mark resulted in conditions that make it difficult for German manufacturers to continue this trade. The indications are that German costs now are above world market levels, and until such time as conditions change in Europe, it is to be expected that German competition has lost its force. As a consequence, 1924 finds a situation where, generally speaking, the world's machine tool trade is in the hands of British and American manufacturers.

As indicated by Fig. 1, British exports have risen from the $5,000,000 level in 1913 to about $12,000,000 in 1920, since which time there has been a decline and at the close of 1923 exports were approximately on a $7,000,000 basis.

Should Study Export Possibilities

Careful discrimination should be exercised by American machine tool manufacturers between the European and the non-European demand in cultivating foreign markets. Obviously, manufacturers of production tools will find almost no demand for their equipment in Asia, Latin America, Australasia or Africa. Their export interests lie almost exclusively in Europe. As a class, these seem to be the manufacturers who have made

Exports Hold Balance in Machine Business

MACHINE tool building in the United States is an industry that in its prime has embraced 400 *different establishments and produced machines valued at* $200,000,000 *in a single year. Yet now it is in a condition where the export business represents the difference between prosperity and depression.*

In the accompanying article, the author, who is chief of the industrial machinery division of the department of commerce, Washington, outlines opportunities in two classes of export markets. The article is abstracted from a paper presented before the Philadelphia section of the American Society of Mechanical Engineers, March 25, 1924.

the best export showing. Conditions in Europe during recent years have seriously interfered with this trade, and there is little that can be said on the subject until Europe starts to recover from the consequence of the war.

Asia Buys More Here

It is interesting to note the changes in trend of American machinery exports during recent years. If instead of considering only metalworking machinery, for a moment, we examine the entire export trade in industrial machinery, it will be noted that in prewar years Europe absorbed about 30 per cent of American exports, while by 1922 this had declined to 20 per cent. In contrast to this, in prewar years the markets of Asia absorbed less than 8 per cent of these exports, while during the last two years they have taken more than 25 per cent of the total. It also will be noted that Latin America has increased in importance.

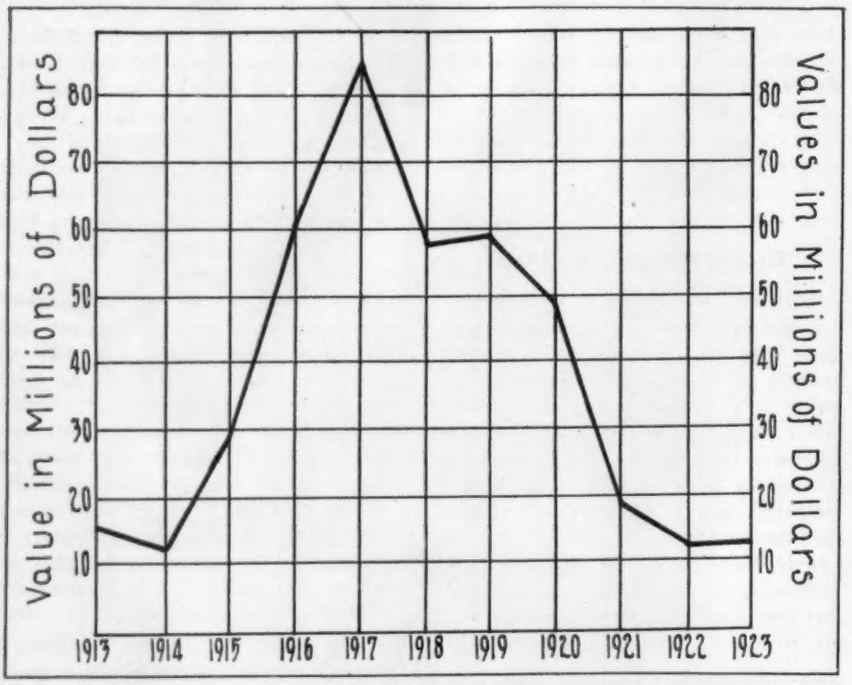


FIG. 2—EXPORTS OF METALWORKING MACHINERY FROM UNITED STATES FROM 1913 TO 1923

Non-European Field Attractive

The outstanding opportunity for export by American machine tool builders in 1924 appears to be that for the American manufacturer of general service tools as in the non-European markets, and these remarks apply to manufacturers of accessories as well as to the producers of tools themselves. The non-European markets have become more important than in prewar days. German competition for the time being is of little consequence, and the trade in these territories will fall into the hands of British or American manufacturers. The problem before the individual American manufacturer is to so cultivate these markets as to insure the sale of his equipment there. Inasmuch as European designs ordinarily represent less highly developed machines than those produced in this country, they usually can be offered at cheaper prices, and if the buyers in these markets are left to their own devices, it is probable that they will purchase European tools because of attractive prices. Because of its superior engineering merit the American machine tool must command a higher price, and it is therefore up to the American manufacturer to make provision for such educational campaigns in these territories as will insure intelligent buying. The American manufacturer will find it necessary to arrange for constructive salesmanship and, in order that these campaigns may be of maximum effectiveness, sales efforts should also be consecutive.

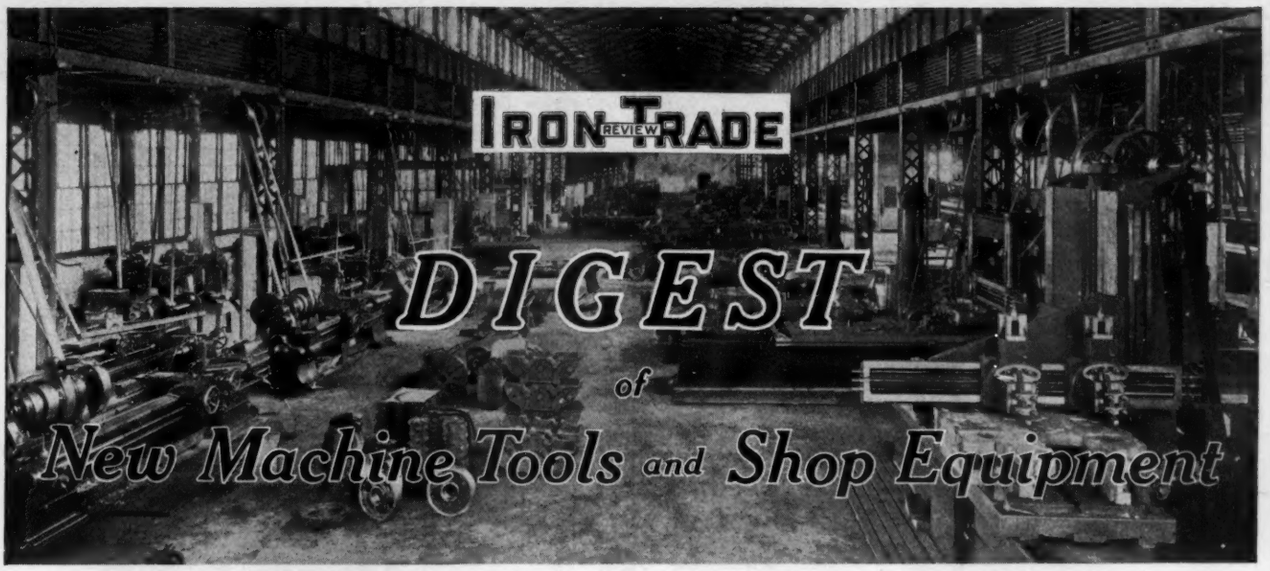
The opportunities for 1924 appear to lie particularly in two directions: first, in markets which formerly were largely under German influence and, second, in markets that are showing natural expansion. In prewar years such countries as Dutch East Indies and Chile, and several others depended largely upon German sources of supply for machine tools. The American manufacturer now has a peculiarly favorable opportunity for sales effort in those markets.

In markets exhibiting natural expansion such as Japan, Central Europe and British India, American machinery is not as well supported as its engineering merit deserves. In 1918, the United States furnished about 80 per cent of the machinery imported into Japan. More recently this participation has declined seriously. In British India in certain years, the United States furnished as much as 25 per cent of the machinery tools. More recently this also has declined and, inasmuch as these ratios in no way express the comparative engineering merit of the machinery offered, one would infer that the American trade suffers because it is inadequately supported by constructive, aggressive salesmanship.

This is a matter of serious importance to the individual machine tool manufacturer. Statistics covering the year 1921 indicate that the average American machine tool builder exported more than 20 per cent of his product so that export business for the industry represents to a large extent the difference between prosperity and depression. At the present time the average American manufacturer of general service tools and machine shop accessories should export well in excess of this ratio, and manufacturers who are falling behind this standard will find it much to their advantage to arrange for a careful revision of their export methods. Experience shows that products of this character are sold in these foreign markets through machinery dealers residing in these various cities. The sales probably narrow down to that of establishing contact with a machinery dealer in each city who will be prepared to handle distribution of the product. While in many instances difficulty will be encountered in establishing such contacts, methods can be found that will yield results far better than have been secured heretofore.

Investigates Enameling of Cast Iron

Wet-process enameling of cast iron is becoming important because of its application to the enameling of stove parts, sanitary fittings and hardware. Technologic paper No. 246, issued recently by the bureau of standards, Washington, is a report of an extended investigation which the bureau has carried out with wet-process enamels for cast iron, both with and without the use of a ground coat. Compositions used in dry process enameling have served as a basis for the work. The effect of varying methods for preparation of frits, mill additions, and relation of composition of the enamel to such properties as adherence, texture and opacity have been studied carefully. The paper describes the various ground coats cover enamels, single coat, and colored and white enamels which were tried out during the experiments and the compositions which gave the most satisfactory results are indicated.



Production Requirements Affect Design

LAST week in commenting upon the annual report of one of the largest independent steel producers, the president of the company stated that greater advancement has been made during the past two years than for 10 years preceding in the direction of improved methods and machinery for producing steel and its finished product. In considering this significant statement one is tempted to determine whether or not it applies with equal truth to progress made in the metalworking industry.

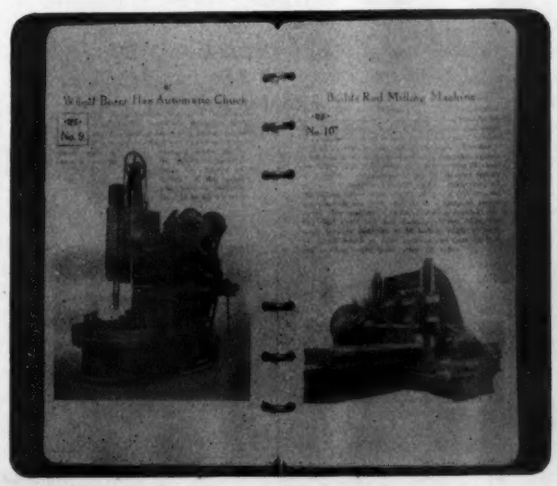
It seems improbable that the improvements made in the machine and finishing of metal products in 1922 and 1923, outweighed those made in the period extending back to 1913. If for no other reason, the impetus given to machine designers for creating new models by the pressure of war-time needs, strikes a balance unfavorably to the achievements of the last two years. Moreover, it must be remembered that the machine tool building industry has not been in a condition favorable for initiating radical improvements. Unlike the steel industry, in which the heavy demand has been an incentive to methods and equipment of more efficient character, the machinery builders have faced the discouraging aspect of thousands of second hand tools being sold to manufacturers, who, under normal conditions, would be purchasers of new equipment.

Improvements Continue Steadily

Yet, in spite of the obstacles in the way of engineering progress, the machine tool industry has contributed to improved methods and equipment for metalworking. In 1922 and 1923, this development has been most noticeable in respect to special machines. Dozens of different types of machines designed for one specific operation or group of operations are available at the present time, and each one of these machines performs work that heretofore could be accomplished only by the most skilled machinists when working on standard machine tools. The requirement for high production on repetitive work has been the guiding motive in many of these special machines and today one finds revolving loading tables, automatic feeding devices, attachments for conveying systems into other auxiliaries designed for the purpose of facilitating production.

In analyzing the new machine tools and shop equipment announced during the month of March, the reader will be im-

Deriving Greater Value from Machine Tool Descriptions



SEVERAL days ago a manufacturer asked an IRON TRADE REVIEW *editorial representative to help him find the description of a machine tool which, he said, "was published in your paper about six months ago." This man read the description at the time of its appearance and was struck by one particular feature of the machine. Since he did not note the name of the manufacturer, he later was put to some inconvenience to obtain the desired information.*

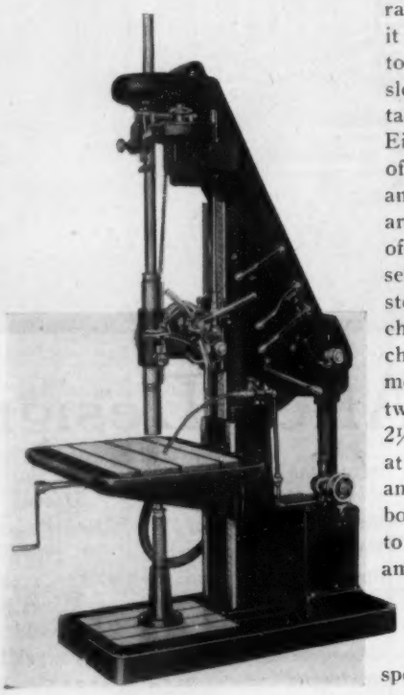
This is only one of many similar instances that come to the attention of the editorial staff and because it is the rule rather than the exception, IRON TRADE REVIEW *three months ago adopted the present method of describing new tools and shop equipment. Now a reader interested in finding an item that appeared in an earlier issue can use the index of all tool descriptions which is published in the first issue of each month.*

Readers who desire an even more accessible file of the descriptions clip and paste them on cards or in a note book, similar to that illustrated on the left.

Designs Drill for Production Work

No. 45

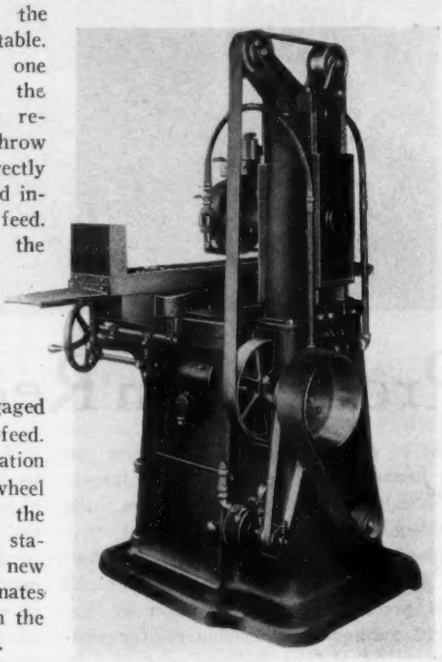
The Barnes Drill Co., Rockford, Ill., has designed a self oiling, sliding head, all geared drilling and tapping machine for production work. It has a spur geared feed, one revolution of the spindle advancing the feed 0.005 inch. To prevent the rack working loose it is dovetailed into the spindle sleeve and keyed to take the thrust. Eight changes each of geared speeds and geared feeds are provided, any of which may be selected without stopping the machine. The machine will accommodate high-speed twist drills up to 2½ inches diameter at suitable speeds and feeds and will bore cylinders up to 8¼ inches diameter. Radial journal bearings are provided for all shafts in the speed transmission.



Grinder Motor Is Concealed

No. 47

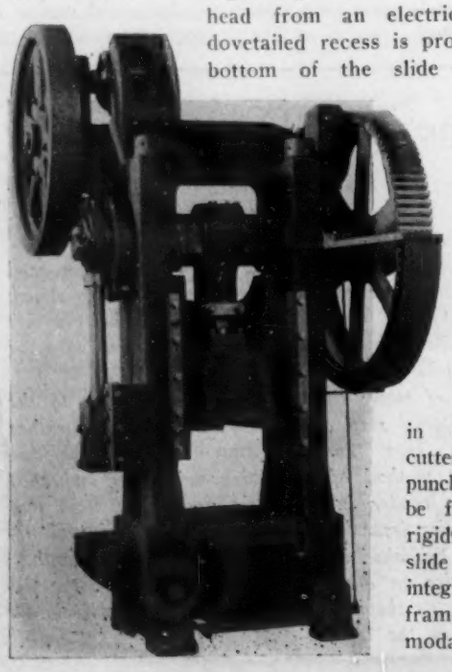
The Wilmarth & Morman Co., Grand Rapids, Mich., has modified the design of its automatic surface grinder so as to conceal the driving motor in the base of the machine. This protects the motor from grit, dust and water and encloses all drive belts. In addition, the grinder requires less floor space. An improvement has been made in the control of the longitudinal table travel. Only one movement of the hand now is required to throw the table directly from hand feed into automatic feed. To reverse the operation the hand lever is moved in the opposite direction and the table is engaged for hand feed. During operation the control wheel in front of the table remains stationary. A new clutch eliminates vibration when the table reverses.



Trimming Press Has Outer Slide

No. 46

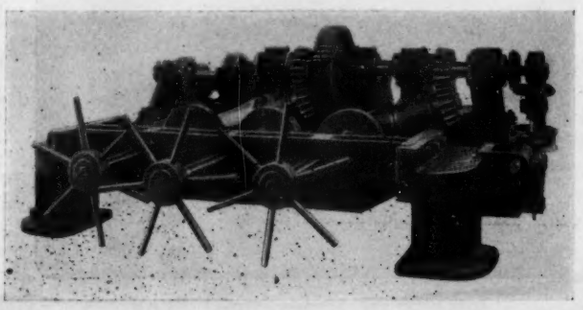
The Niagara Machine & Tool Works, Buffalo, has introduced a new trimming press of the single crank, straight sided type with an outer slide for cutting or punching dies. The press frame is of tie rod construction and is made up of four pieces. It is claimed that the tool is particularly suitable for forge shop use. The drive is overhead from an electric motor. A dovetailed recess is provided in the bottom of the slide for use in mounting dies. The outer slide is actuated by an eccentric keyed to the main shaft and its elevation can be adjusted. The bottom of this slide has a hole in which upper cutter holders or punch shanks can be fastened. For rigidity the outer slide bed is cast integral with the frame. It accommodates punches.



Builds Straightening Machine

No. 48

The Sutton-Abramsen Engineering Co., Pittsburgh, has introduced a round straightening machine for hot rolled, cold rolled and cold drawn bars, tubes and pipes of both ferrous and non-ferrous metals. It has a capacity for bars from 4½ to 9 inches diameter and tubes from 4½ to 12 inches diameter. A pinch roller attachment provided on the leaving end of the machine is operated by means of an air cylinder controlled by a hand lever at the entering end of the machine. With a sloping runout plate and proper racks, no labor is required at the leaving end. The machine is equipped with a two-speed gear drive, providing a straightening speed of 20 to 40 feet per minute on slow gear and 34 to 68 on fast gear. Drive is supplied by electric motor, a 100-horsepower, 400 to 800 revolution per minute, variable speed, direct-current motor being recommended. A floor space 15 x 13 feet is required and the machine stands 6 feet 7 inches high. Changes for size are made quickly. If not connected direct with the mill, the machines can be operated by common labor.



pressed with the extent to which the desire for a high rate of production has dominated the design of the new tools. This influence is reflected even in a number of standard machines, such as drills and milling machines.

Coincident with the evidence of an effort to adapt machines to production work is an apparent revival of the tendency of long standing to apply direct motor drive on machines. The motorizing of some of the equipment described on the accompanying pages involves a number of interesting factors, one of which is saving in floor space.

Several good examples of the desire to fit machines for higher production were given in the *Digest* of equipment in the March 6 issue and the point also is well illustrated in the descriptions presented in this issue. Machine No. 63, on page 929 is a gang drill on which an overhead trolley system has been mounted for the purpose of returning work holders from the delivery station to the loading station. Since the chuck and mounting for the work shown in the illustration weigh 75 pounds, the advantage in production derived from the trolley device is apparent.

The hand milling machine, No. 52, page 926, is designed expressly for production work although of course it is well suited to all kinds of general hand milling work. It is adapted to use in the automotive industry where its use as a single-purpose machine permits its productive capacity to be realized to the greatest extent.

While the tendency to adopt motor drive on comparatively small machines has been apparent for quite a number of years, it is surprising to note the number of tools in which the electric drive is being employed for the first time. However, in most cases, the substitution of a motor drive for a belt drive is not a mere question of replacement but actually involves the redesigning of some of the essential parts of the machine. This is true in the case of the universal cutter and tool grinder where the use of the directly connected motors does away with the superstructure and overhead countershaft required on the belt driven models. On the surface grinder, described on page 924, the application of a motor and the placing of it inside the base of the machine not only protects it from grit, dust and water, but also reduces the amount of floor space required.

Changes in motors to conform to new requirements constantly are being made by manufacturers of electric equipment. The new single-phase motor, No. 61, operating on the squirrel cage induction principle, eliminates the short circuiting switches heretofore considered assential and permits simple construction. It combines high starting torque with low current demand and has operating characteristics similar to those of the induction motor. Both the maximum and accelerating torques are approximately 200 per cent of full load torque without any low points during acceleration. The no load and full load speeds are respectively about 3 per cent above and below synchronous speeds, giving very close regulation for a motor of this type.

Another example of the application of an electric motor in an interesting man-

Machine Tool Index Is on Page 931

A RECAPITULATION of descriptions of tools and equipment in this issue, as well as alphabetical lists by manufacturers and products of all machines described thus far this year, appear on the next page. As announced in the Feb. 7 issue these indices will be carried forward in subsequent numbers of IRON TRADE REVIEW.

Gun Sprays Paint or Varnish

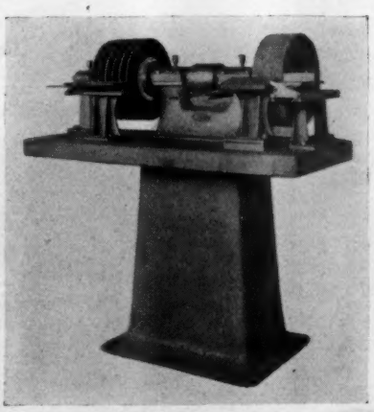
No. 49

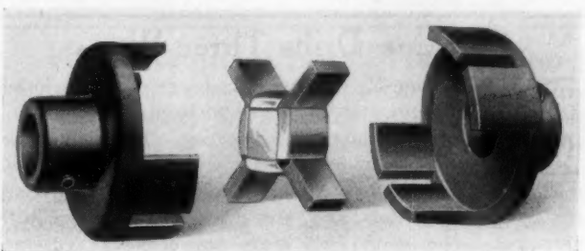
The DeVilbiss Mfg. Co., Toledo, O., has developed a spray gun for applying paint and varnish materials to all kinds of surfaces. It can be used in finishing rooms or in the portable painting field. Its light weight together with its free trigger action are claimed to add to its ease of operation. The gun can be completely disassembled and reassembled quickly.

Grinds Tack Machine Dies

No. 50

Henry Perkins Co., Bridgewater, Mass., has built a tack and wire machine die grinder. It carries a 12 or 14-inch x 4½-inch cup wheel on one side and six 12 or 14-inch bead wheels on the other.

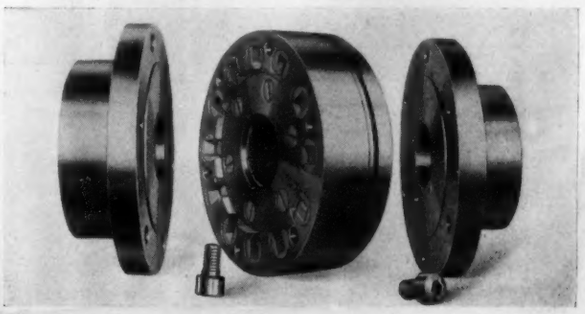




Introduces Flexible Couplings

No. 51

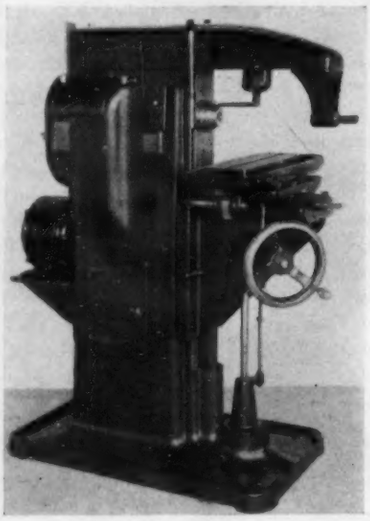
Smith & Serrell, Newark, N. J., have introduced two new types of flexible couplings. Above is shown a coupling for ¼ to 1 horsepower motors running at 1800 revolutions per minute. The two similar flanges with projecting lugs are driven through a spring cross from one pair of lugs to the other. Couplings of the type shown below are designed to transmit 300-horsepower per 100 revolutions per minute and will operate up to 2500 revolutions at a corresponding rating of 7500 horsepower.



Hand Miller Is Motor Driven

No. 52

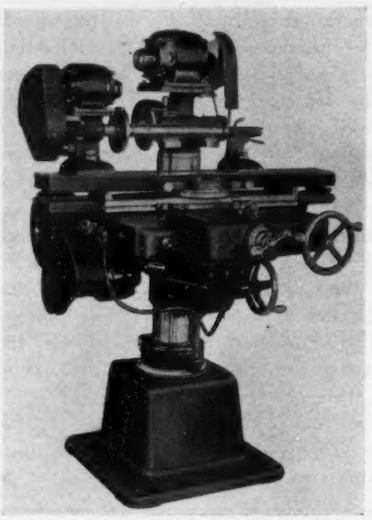
The Pratt & Whitney Co., Hartford, Conn., has introduced a motor-driven hand milling machine designed expressly for production work, although it is well adapted to all kinds of general hand milling. Power is provided by an individual electric motor mounted on a bracket on the side of the machine and controlled by a push button or snap switch on the machine. Through gearing the motor is connected directly to the spindle, a feature which provides full power regardless of variations in spindle speed. Changing of spindle speeds is accomplished by transposing slip gears. The overhanging arm of the machine is a ribbed casting and provides a strong and rigid support. The outboard support is another ribbed casting which fits in a T-slot on the underside of the arm. This support carries the usual mounting for an arbor. The machine is equipped with a small oil pot but a pump can be installed if desired. The inside of the column forms the oil reservoir.



Redesign Grinder for Motor

No. 54

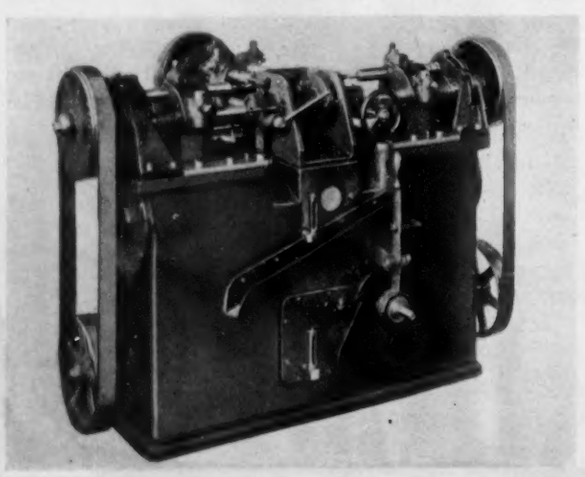
The Wilmarth & Morman Co., Grand Rapids, Mich., has redesigned its universal cutter and tool grinder to provide a direct connected motor on the machine. This arrangement eliminates the superstructure and overhead countershaft heretofore required. The new machine is driven by a ½-horsepower motor located at the top of the column while the headstock is equipped with an ⅛-horsepower motor for cylindrical and internal grinding. For operating the longitudinal power feed of the table, a ¼-horsepower motor is provided and is attached to the gear box on the saddle. This latter motor, of course, is not required with the hand feed machine. Elimination of the superstructure, it is claimed has reduced to about one half the floor space required for the machine. Application of individual motor drive has provided a more simple and convenient means of control, the switches for the motors being located on the knee below the table. The machine fully equipped weights about 1600 pounds.



Machine Drills Three Ways

No. 53

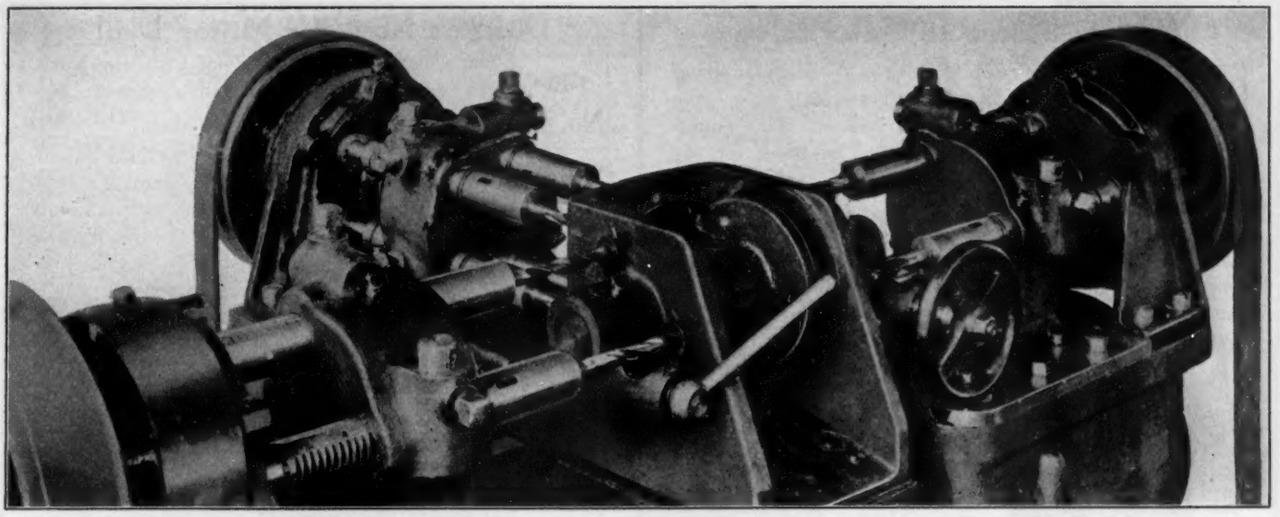
William K. Stamets, Pittsburgh, has developed an automatic three-way horizontal drilling machine for high speed drilling. Holes in three different directions may be drilled at one time. The feed is obtained by means of drum cams providing for quick travel, slow feed, and quick return to the drill carriages. The main feed gears are enclosed and run in oil. Quick adjustment of the drill spindles to take care of different length drills is obtained through sleeve rack and pinion. A clutch provided in the feed mechanism is automatically tripped at the end of the drilling cycle or may be operated manually. A friction safety device incorporated in the feed operates to prevent injury due to dull drills or broken points or other obstructions.



Tractor Is for Hard Service

No. 55

The Crescent Truck Co., Lebanon, Pa., recently has added a new model tractor to the line of industrial tractors and trucks which it manufacturers. This tractor is of the three-wheel type but is much heavier than previous models, having been designed for extremely hard service. The driving motor is specially built and has a large overload capacity. Transmission to the driving wheels is through a worm and worm wheel and differential. The frame construction is of structural shapes, hot riveted, and all castings are of steel. A heat treated chrome nickel steel driving axle shaft is used. Friction is reduced by ball and roller bearings. The controller is considerably oversize and has ¾-inch fingers. The storage batteries are completely enclosed within the frame. The driver sits on a seat on top immediately behind the steering handle. The controller is operated by the left hand.



CLOSE-UP OF THREE-WAY HORIZONTAL DRILLING MACHINE DESCRIBED AS NO. 53

ner, is afforded by the new 5-inch hand milling machine illustrated on the accompanying pages. The motor is geared directly to the spindle so that full power is transmitted to the cutter, notwithstanding variations of spindle speed. This arrangement is in contrast with the cone drive in which the power decreases as the spindle speed increases. Here again, however, a different idea dictated the location of the motor. The motor is about half-way up on the rear column of the machine on a bracket. Its position here is low enough to avoid any tendency toward vibration or unsightly appearance and yet is high enough above the floor to keep it clear of chips, sweepings, etc. Its position on the bracket makes it easily accessible for lubrication, inspection and adjustments and replacement is simplified.

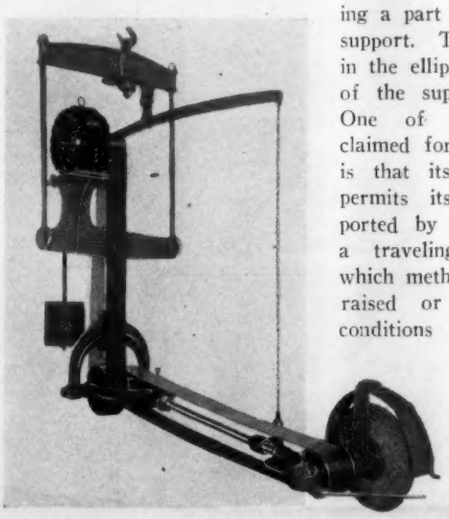
Develops Three-Way Drill

Multiple two and three way drilling machines have been used more extensively ever since the automobile industry began to assume large proportions. The tendency now is to adapt these machines to higher production and in most cases this means specialization. The automatic three way horizontal drilling machine shown, above and as No. 53, is for high speed drilling in castings and other parts such as valve bodies, differential cases and other similar products. The location of the drill spindles makes it possible to handle rather intricate work and the adjustment of the drill spindle takes care of drills of different lengths.

Swing Frame Grinder Is Compact

No. 56

The Excelsior Tool & Machine Co., East St. Louis, Ill., has introduced a swing frame grinding and polishing machine designed for direct motor drive, the motor being placed near the top where it is protected from dust. The machine is built in four sizes accommodating 12, 18 and 24-inch diameter wheels for grinding and 18-inch wheel for polishing. In this machine, the motor balances the backward and forward movement while the counterweight balances the wheel end or upward and downward movement. This accurate balancing enables the operator to confine his attention to the grinding wheel. An easy movement is obtained by the arm forming a part of the motor support. This arm rolls in the elliptical openings of the supporting rods. One of the features claimed for the machine is that its compactness permits its being supported by the hook of a traveling crane, by which method it may be raised or lowered as conditions require. The larger sized machines are well adapted to foundries, safe works and rail shops.



Hoist Requires Small Head Room

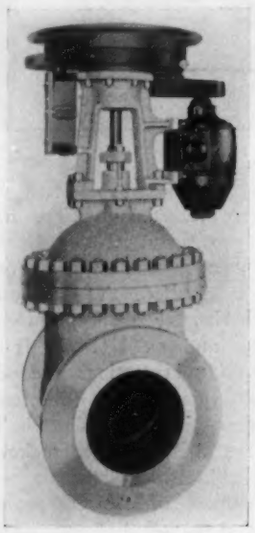
No. 57

The Clinton E. Hobbs Co., 12 Pearl street, Boston, has introduced on the market a new line of electrically operated chain hoists which are especially adapted to the rapid handling of light material. The type of construction has been made compact to permit the installation of hoists in locations where only low head room is available. The entire hoist is of steel construction and is completely enclosed. By means of drop pull handles, the operator is able to control starting and stopping of the motor. Power is transmitted from the motor to the hoist through a balanced train of gears mounted between two central frames. Any method of suspension desired can be furnished, the three standard types being hook suspension, plain trolley suspension, and geared trolley suspension. In the latter, a chain wheel provides positive lateral motion for the trolley and permits rapid or slow starting and stopping. Various standard sizes of hoists are offered.

Applies Motor to Gate Valve

No. 58

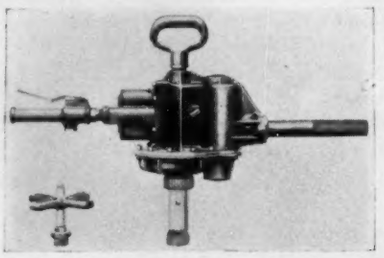
The Crane Co., Chicago, is manufacturing motor operated gate valves which may serve as regular or emergency valves. This equipment consists of a motor mounted on the valve yoke and geared to the stem of the valve, with a limit switch device also mounted on the yoke to control the travel of the gate. The valve is controlled by magnetically operated contact switches which are governed by push buttons at any desirable number of stations. The remote control feature lends itself to multiple point control and a valve may be operated from as many stations as desired by connecting them in parallel. Indicator lights show whether the valve is open or closed. The motors are designed specially for valve operation and are furnished for all standard voltages both alternating and direct, and are slow speed, being rated on a foot-pound basis rather than horsepower. A cushioning feature protects both the valve and motor should the gate overtravel or the motor control equipment fail to function. A lost motion device unseats the valve while the motor is coming up to full speed.



Designs New Air Motor Drill

No. 60

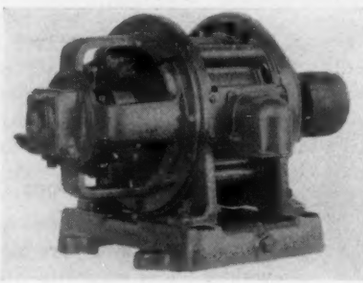
The Chicago Pneumatic Tool Co., New York, has developed an air drill designed particularly for reaming service. The tool weighs 35 pounds. An extremely accurate balance of the piston makes the drill easy to handle. The cylinders are of the double action type provided with a packing gland. The valves are between the cylinders.



Develops New Induction Motors

No. 61

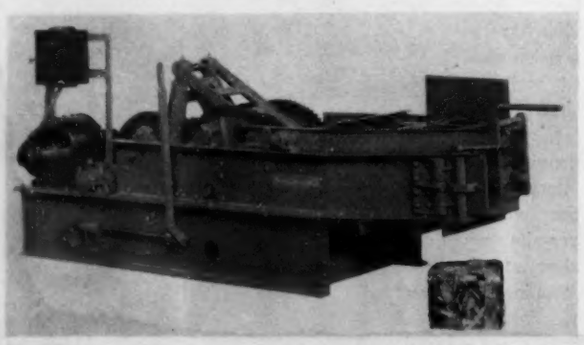
The General Electric Co., Schenectady, N. Y., is introducing two new types of induction motors. One is single phase and is designed for constant speed at 60, 50 or 40 cycles, 110 or 220 volts, and is built in sizes from ½ to 10 horsepower. The other is of two or three phase, squirrel cage, 60 cycle design in sizes from ½ to 15 horsepower. The latter have riveted frames.



Makes Changes in Baling Press

No. 59

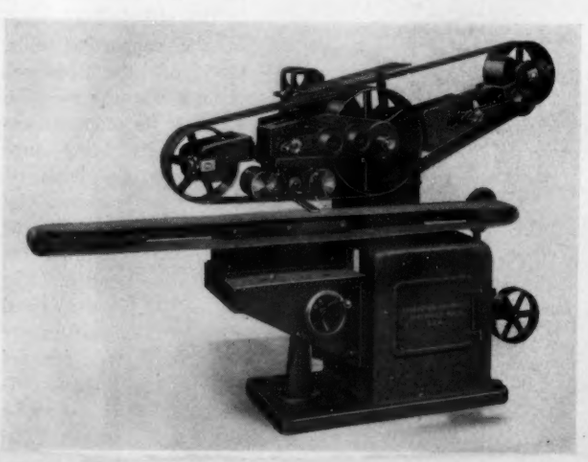
The Logemann Bros. Co., Milwaukee, which some time ago purchased the Chicago Baling Press Mfg. Co., has made some changes in design of the scrap metal baling press built by the latter company. This metal baler, it is claimed, is especially suitable for tin and galvanized scrap, which must be pressed into bales that the detinning acids will penetrate. The baler also is adaptable for baling other sheet metal in plants having insufficient accumulation to warrant the installation of hydraulic equipment. The driving motor is mounted directly on the lower press beams and the machine runs with little vibration. Gear bearings have been changed from cast iron to cast steel, and all gears are machine cut instead of rough cast, thereby insuring quiet operation. The clutch, gears and also the cover balance weights are located inside the frame with overhanging parts and all moving parts properly housed. The frame has been made the same width as the largest part of the box and provides rigidity.



Grinds Flat Work Automatically

No. 62

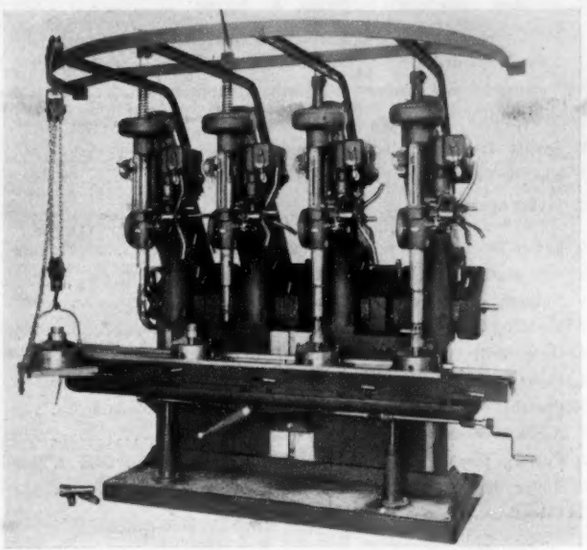
The Production Machine Co., Greenfield, Mass., has designed a grinding machine for finishing or polishing flat pieces automatically. A conveyor belt carries the work under the finishing wheels, the duty of the operator being only to load and unload the belt. The machine will accommodate pieces from 1/16 to 4 inches thick, up to 5½ inches wide and 18 inches long. The conveyor belt is driven 8 feet per minute. Work shorter than 6 inches may be laid on wooden blocks attached to the conveyor belt. The table upon which the conveyor is attached is quickly adjustable for different thicknesses of work, but each piece run through at a given adjustment receives the same pressure and finish.



Trolley Aids Work on Gang Drill

No. 63

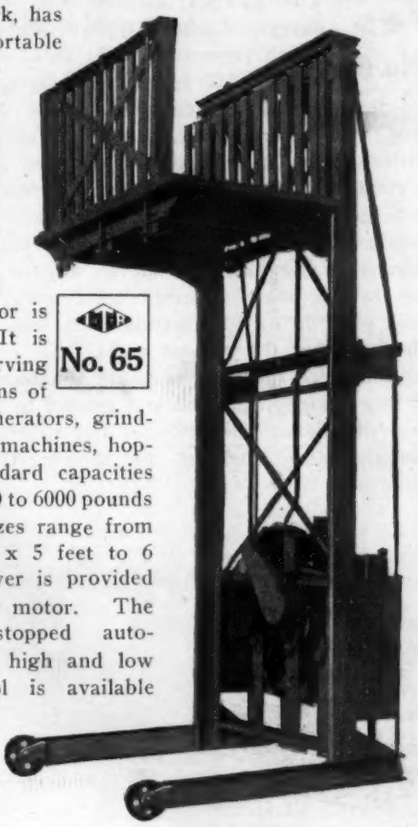
The Barnes Drill Co., Rockford, Ill., has equipped its 4-spindle, self-oiling gang drilling and boring machine with an overhead trolley system for returning the work holders to the loading station. As the chucks and their mountings, including the work holders, weigh about 75 pounds, they were too burdensome to handle by hand conveniently. The application of the trolley is claimed to have made a material gain in production. The trolley itself is attached to the machine by supports.



Shop Elevator Is Portable

No. 65

The New Jersey Foundry & Machine Co., 90 West street, New York, has developed a portable elevator designed to solve the problem of handling loaded trucks and wheelbarrows from one elevation to another in places where a freight elevator is not practical. It is suitable for serving elevated platforms of cupolas, gas generators, grinding and mixing machines, hoppers, etc. Standard capacities range from 1000 to 6000 pounds and platform sizes range from 3 feet 6 inches x 5 feet to 6 x 10 feet. Power is provided by an electric motor. The platform is stopped automatically at its high and low points. Control is available from the high or low levels or from the platform.



Develops Power Pipe Machine

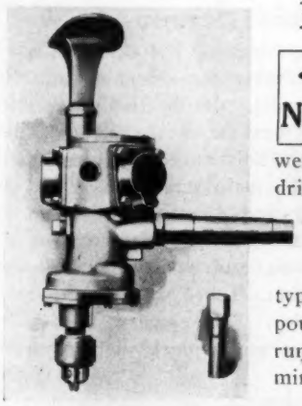
No. 64

The Williams Tool Corp., Erie, Pa., has brought out a portable pipe threading, cutting-off and reaming machine. A feature is that motor, belt and hand drives are incorporated into the one unit. The machine can be converted into a power unit quickly and by using a flexible shaft it will operate hand stocks up to 8 inches diameter. For convenience a high speed emery wheel grinder is mounted on the pulley shaft at the rear of the machine and is driven direct from the motor. A 1-horsepower motor mounted on a hinged table in the base of the machine transmits power to the driving pulley.

Designs Air Drill

No. 66

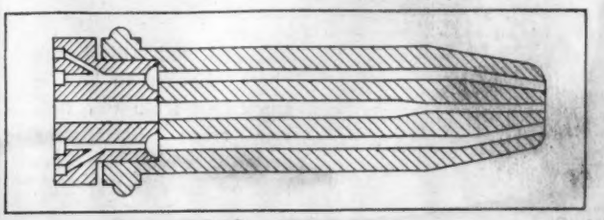
The Ingersoll-Rand Co., 11 Broadway, New York, has designed a lightweight, nonreversible drill for drilling up to 9/16-inch holes and reaming up to 5/16 inch. The driving motor has three renewable type cylinders. At 90 pounds air pressure the drill runs at 700 revolutions per minute.



Tip Has Renewable Seat

No. 67

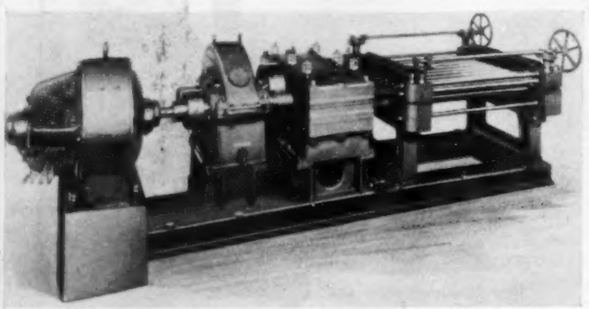
The Alexander Milburn Co., Baltimore, has perfected a metal cutting torch tip which, in addition to mixing the gases and preheating the cutting oxygen, is claimed to give added velocity and penetration to the preheating and cutting jets. The tip is provided with a renewable seat which facilitates cleaning and maintenance.



Designs New Sheet Leveler

No. 68

The Fawcus Machine Co., Pittsburgh, has developed a new type of sheet roller leveler which incorporates the most modern driving units. All rollers are driven through an independent inclosed cut herringbone gear transmission, with each roller and driving spindle connected with universal couplings. The roller pinion housing is connected to the motor with an inclosed cut herringbone gear drive. All the units are mounted on a continuous base plate. It is claimed that this design eliminates vibration and uneven angular velocity from the rollers, thereby level sheets are produced. The base plate is of box section with well ribbed stands for mounting the various parts. All connecting pads are machined carefully to secure alignment. Rollers are of forged steel, hardened and ground to prevent spring and vibration. The ends of the rollers are squared, rounded and hardened to receive the connecting spindles.



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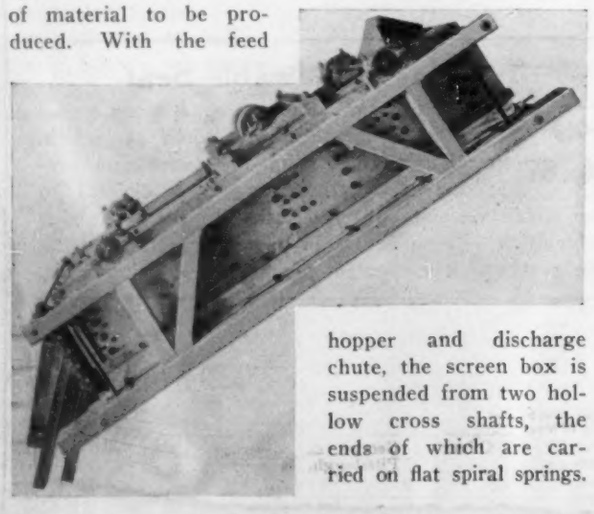
70.	Spline hobbing machine	Sommer & Adams Co.	930

Pulley Vibrates Screen

No. 69

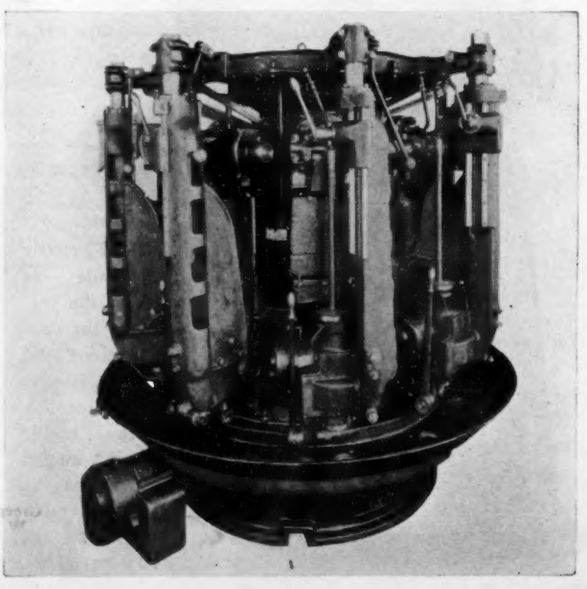
The Link-Belt Co., Chicago, has designed a vibrating screen suitable for screening materials requiring grading during the process of manufacture. Vibration of the screen is provided by a pulley which is unbalanced by variable weights so as to impart to the main screen box rapid vibrations of proper intensity and direction to screen different materials. The pulley is provided with a bushing of special composition and is automatically oiled by force feed lubrication. There are no other moving parts than the pulley. The screen box is arranged for one, two or three screen decks depending upon the number of sizes of material to be produced. With the feed hopper and discharge chute, the screen box is suspended from two hollow cross shafts, the ends of which are carried on flat spiral springs.



Hobber Has Eight Spindles

No. 70

The Sommer & Adams Co., 18511 Euclid avenue, Cleveland, has developed a multiple spindle spline hobbing machine designed for hobbing splines on one end of automobile axle shafts. Eight separate and independent working units are mounted in a turret which rotates continously about a vertical axis. During one revolution of the turret eight pieces are completed. Power is delivered from the driving mechanism in the base through a vertical shaft in the column to the hob and work.



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22.	Suspension device	678
32.	Hydraulic	680
	Saws	
2.	Friction saw	424
	Small Tools	
16.	Gage, dial	428
28.	Gage, dial	680
44.	Parallels	684
29.	Taps	680
12.	Vise	426
7.	Wrench, pipe	426
	Welding Equipment	
67.	Cutting torch tip	929
20.	Electrode holder	428
39.	Electric welder	682
40.	Welding torch	682
	Miscellaneous	
51.	Coupling, flexible	925
43.	Flow meter	684
19.	Forge	428
58.	Gate valve	928
15.	Lamp guard	428
31.	Melting pot	680
27.	Molding machine	679
11.	Motor mounting	426
61.	Motors, induction	928
37.	Oil separator	682
8.	Periscope	426
68.	Roller leveler	930
49.	Spray gun	925
69.	Vibrating screen	9.30

The rate of operation is high and the floor space required is extremely small.

Spline hobbing is placed on a production basis by the new multiple spindle machine described as No. 70, page 930. The hobber was designed especially for cutting splines on automobile axle shafts. When the machine runs at the rate of one revolution of the turret in four minutes, the output is about 120 shafts per hour.

Form Metal Trades Group

The Fresno Metal Trades association, Fresno, Cal., has been organized with membership open to all foundries, machine shops, ironworks or other metal-working industries. G. R. Matthews, Matthews Foundry Co. is president; G. L. Roberts, Pioneer Brass Foundry, vice president and G. J. Doland, United Engine & Machine Co., secretary and treasurer.

Sales Heads To Meet

Sales managers will gather for their first annual convention on April 10 and 11 when the sales executives' division of the American Management association will meet at the Hotel LaSalle, Chicago. Archer Wall Douglas, chairman of the committee on business standards and statistics, United States chamber of commerce, will discuss the business outlook under the title "Is Business Coming or Going?"

Other topics for discussion will include co-operative research in sales management, principles and methods in training salesmen, holding sales conferences, sales research within the company, development and use of sales manuals, sales budgets, and compensation for salesmen.

The annual report of the New Britain Machine Co., New Britain, Conn., for the year 1923 shows that the company paid off $725,000 of bank indebtedness. The corporation reduced its deficit for the year by $282,118, leaving a total defict of $1,068,139.

Convention Calendar

April 23-24—National Metal Trades association. Annual convention at the Hotel Astor, New York. Louis W. Fischer, Peoples Gas building, Chicago, is secretary.

April 24-26—American Electrochemical society. Spring meeting, Bellevue-Stratford hotel, Philadelphia, Dr. Collin G. Fink, Columbia university, New York, is secretary.

April 28-30—American Gear Manufacturers' association. Spring meeting, Lafayette hotel, Buffalo. T. W. Owen, 2443 Prospect avenue, Cleveland, is secretary.

April 30-May 2—Society of Industrial Engineers—Annual convention at Buffalo. George C. Dent, 608 South Dearborn street, Chicago, is secretary.

May 5-10—Sheet Steel Executives. Second annual convention under auspices of National Association of Sheet and Tin Plate Manufacturers, Hotel Greenbrier, White Sulphur Springs, W. Va. W. S. Horner, 1832 Oliver building, Pittsburgh, is chairman.

May 8-9—British Iron and Steel institute. Annual meeting at the Institution of Civil Engineers, London. G. C. Lloyd, 28 Victoria street, London, is secretary.

May 19-21—Southern Supply and Machinery Dealers' association, National Supply and Machinery Dealers' association, and American Supply and Machinery Manufacturers' association—Triple convention at Hotel Cleveland, Cleveland. Alvin M. Smith, Smith-Courtney Co., Richmond, Va.; T. James Fernley, 505 Arch street, Philadelphia; and F. D. Mitchell, 1819 Broadway, New York, are the secretaries respectively.

May 20-23—National Association of Purchasing Agents. Annual convention, Mechanics Hall, Boston. W. L. Chandler, 19 Park place, New York, is secretary.

May 22-23—American Society for Steel Treating. Spring sectional meeting, LeClaire hotel, Moline, Ill. W. H. Eisenman, 4600 Prospect avenue, Cleveland, is secretary.

May 22-23—National Pipe and Supply association. Annual meeting, Hotel Cleveland. George L. McIlvane, 909 Oliver building, Pittsburgh, is secretary.

May 26-29—American Society of Mechanical Engineers—Spring meeting Hotel Cleveland, Cleveland. Calvin W. Rice, 29 West Thirty-ninth street, New York, is secretary.

Salvaging Hulls of Battleships

About 10,000 Tons of Material Heretofore Lost in Scrapping Each Ship Now Is Reclaimed by Method of Cutting Up Hulls At Navy Yards— Cost of Work Is Comparatively Low

BY CHARLES A. BARNES

FOR 30 years it has been the custom of the United States navy to sell for scrap as many of its old battleships as were not required for target practice. The method pursued by the buyers was to tow the ships to an isolated spot and recover all of the material that could be gotten off of the boat down to the water line. They then either abandoned the hulls or towed them out to deep water and sank them.

Following the limitation of armaments conference at Washington, the problems involved in the scrapping of war vessels immediately became more important. It became particularly desirabe to evolve an easy and economical way of reclaiming the large amount of material in the hulls which formerly had been wasted. It may be estimated conservatively that this material averages 10,000 tons per hull. During the past two years at least two companies in the East have gone to great expense in installing equipment for handling such ships alongside dock or riverbank. One of these companies has been operating for nearly three years and the other for one year, but neither has gotten to the point of disposing of the hull after cutting down to the water line. These companies either have not bid at all, or have made extremely low bids on the ships that have been offered for sale during the past six months.

Salvage Problem Solved

AT THE request of IRON TRADE REVIEW, *Charles A. Barnes, treasurer of the Steel Scrap Co., and vice president of the Perry, Buxton, Doane Co., Philadelphia, has written the accompanying review of the developments in the ship scrapping program which devolved on the United States navy as a result of the agreement at the limitation of armaments conference at Washington. As is clearly indicated by Mr. Barnes, the navy yards, and particularly that at Philadelphia, are ideally equipped to salvage the scrap in vessels. Mr. Barnes tells how the salvaging of the hulls is accomplished without difficulty at the Philadelphia yard.*

Captain E. W. Bonaffon, senior member of the naval board who had gained a reputation for the able manner in which he had been disposing of the navy's surplus material, was given full charge of the sale of the ships to be scrapped as a result of the Washington conference. On Oct. 25, 1923, he offered for sale the battleships SOUTH DAKOTA and INDIANA under construction at the Brooklyn navy yard, NORTH CAROLINA at the Norfolk navy yard, MONTANA at Mare Island and the battle cruisers UNITED STATES and CONSTITUTION at the Philadelphia navy yard. A catalog of these vessels, together with descriptions and weights and the different materials in them, was sent to all possible bidders. These vessels were offered for sale in three ways: (1) "As is" lump sum, the buyers to do the work; (2) per ton, cut to shipping size, f.o.b. cars; and (3) per ton, cut to charging box size, f.o.b. cars.

After the catalog was printed, the

FIG. 1—DECK OF BATTLESHIP ALABAMA AFTER BEING USED BY UNITED STATES ARMY AS TARGET FOR AIRPLANES OVER CHESAPEAKE BAY. SOLD TO A WRECKING COMPANY "AS IS"

FIG. 2—DECK OF U. S. S. MICHIGAN AT PHILADELPHIA NAVY YARD THREE WEEKS AFTER WORK OF SCRAPPING STARTED

question of scrapping these ships in the navy yards was studied thoroughly, and it was decided that the cost of the work in the navy yards would be too high. It was decided, therefore, to consider only bids on a lump sum "as is" basis. When the bids were opened, it was found that practically every bidder with the exception of the Steel Scrap Co. had bid on the "as is" lump sum basis. But the bid of the Steel Scrap Co. was so much higher than the other bids that Captain Bonaffon called a conference of the different interests involved, including the contractors and the acetylene and torch men, and he sought to get a bid for cutting up the vessels on which the navy could net more money by accepting the bid of the Steel Scrap Co. than by selling the vessels for a lump sum.

At this meeting the Steel Scrap Co. offered to cut the two boats in Brooklyn to charging box size for $9 a ton and to cut the two boats at Philadelphia to shipping size for $3.50 a ton, and it contended that because of the scope and suitability of its equipment, the navy itself could scrap these vessels more cheaply than anybody else. Captain Bonaffon held several other conferences and conferred with the construction officers of the Brooklyn and Philadelphia navy yards on the matter. These officers, after thorough consideration, decided to contract with the navy to do the work at the prices that had been named by the Steel Scrap Co. The only exception was in the case of the MONTANA, at Mare Island, on which the only bid was a lump sum.

The results already have proved that the original estimate was conservative. The Philadelphia navy yard already has scrapped one boat, the CONSTITUTION, at a cost of less than $3 per gross ton, while at Brooklyn about one-half of the tonnage in that yard had been scrapped at a cost under the original estimate.

On Nov. 1, 1923, the following ships afloat were offered for sale on the

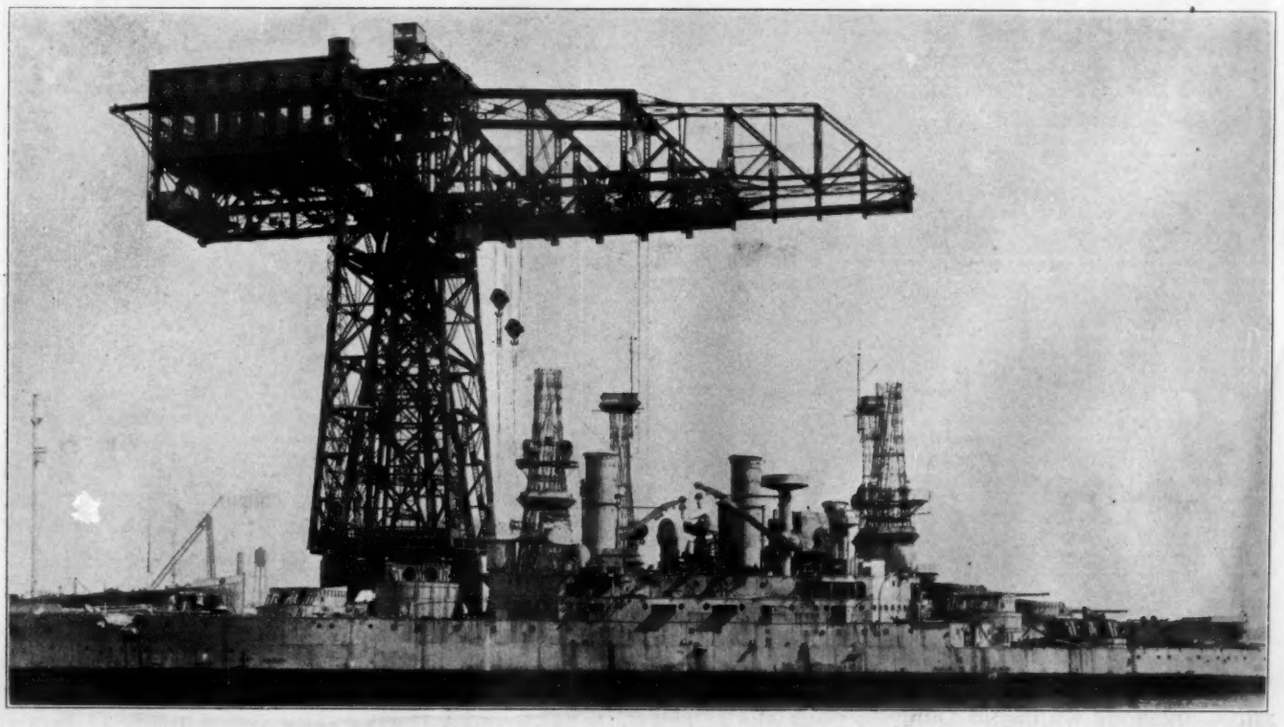

FIG. 3—U. S. S. MICHIGAN AT PHILADELPHIA NAVY YARD DISMANTLED AND READY FOR CUTTING UP. SEE FIG. 2

lump "as is" basis: NEW HAMPSHIRE and LOUISIANA at Philadelphia, GEORGIA and RHODE ISLAND at Mare Island and the CONNECTICUT at Puget sound. The Steel Scrap Co. refused to bid on these ships, its experience indicating that the companies handling boats in this manner on the eastern coast had lost money on account of lacking equipment for handling all of the material, particularly the large amount of steel in the hull. The company again strongly recommended that the navy cut the boats in the Philadelphia navy yard, in which event it offered to bid on the material f.o.b. cars, cut to shipping size. These boats, however, were sold on the "as is" lump sum basis.

On Nov. 8, 1923, Captain Bonaffon sent out a catalog offering for sale the battleship IOWA and the battle cruisers CONSTELLATION and RANGER, then in the process of construction at the plant of the Newport News Shipbuilding & Drydock Co., Newport News, Va., and also the battleship MASSACHUSETTS, then under construction at the Fore River plant of the Bethlehem Shipbuilding Corp., Quincy, Mass. Inasmuch as these vessels were located in private yards, the navy took only "as is" lump sum bids on the vessels at Newport News, and on a gross ton basis, in shipping sizes, f.o.b. cars, at Quincy.

On Nov. 30, 1923, the following battleships afloat were offered on an "as is" lump sum basis: MICHIGAN, MINNESOTA and KANSAS at Philadelphia; VERMONT and NEBRASKA at Mare Island and the DELAWARE at Boston. The highest lump sum bids on these boats in the east were as follows: MICHIGAN, $40,000; MINNESOTA, $37,760; KANSAS, $45,000, and DELAWARE, $36,666. The Steel Scrap Co. again refused to bid in this manner and again suggested the boats be cut up by the navy. The bids were thrown out and the navy decided to cut the boats itself and sell the material, cut to shipping size, f.o.b. cars at the Philadelphia navy yard. The sale was held Jan. 23, 1924, and brought the following prices for the scrap in the MICHIGAN, MINNESOTA and KANSAS:

50,000,000 pounds of iron and stteel scrap at $14.05 per gross ton.....	$313,616.07
22,000,000 pounds of armor plate scrap at $14.10 per gross ton..	138,482.14
1,400,000 pounds of metal scrap at 8.97½ cents per pound.....	126,000.00
Total	$578,098.21

On Feb. 5, 1923, the navy sold at the Boston navy yard the battleship DELAWARE to be cut in the Philadelphia navy yard. This scrap brought the following prices, f.o.b. cars, Philadelphia:

10,814 gross tons of iron and steel scrap at $12.42½.....	$134,403.95
4,894 gross tons of armor plate scrap at $11.50	56,281.00
850 gross tons of forgings at $11.50	9,775.00
275 gross tons of metal at 7½ cents per pound.....	4,125
Total	$204,584.95

The boats are being scrapped at the Philadelphia navy yard, on both sides of Pier 8, which is equipped with a 350-ton crane as well as a smaller crane. The material is cut to shipping size by the use of oxy-acetylene torches. The pieces then are lifted off by means of the cranes and loaded on to cars. After all of the heavy pieces have been lifted off, the boats are to be placed in dry dock where the remaining tonnage will be cut with torches. Thus, every pound of material in the vessels will be converted into marketable scrap ready for shipment.

The navy's estimate for cutting these afloat ships is $8 per gross ton, but careful observation of the work indicates that, unless saddled with a tremendous overhead, the work of salvaging these vessels will be done for $6 a gross ton. Even at the $8 figures, there will be a tremendous saving to the government. Captain Bonaffon estimates that the saving to the government by cutting the vessels in the navy yard will be at least $400,000 as compared with the prices, that would have been realized on an "as is" basis by sale to outside wreckers.

It is the writer's belief that the United States navy never again will sell a boat to a private company on an "as is" basis for the reason that, with its equipment, it can do the work much more cheaply and expeditiously than anybody else.

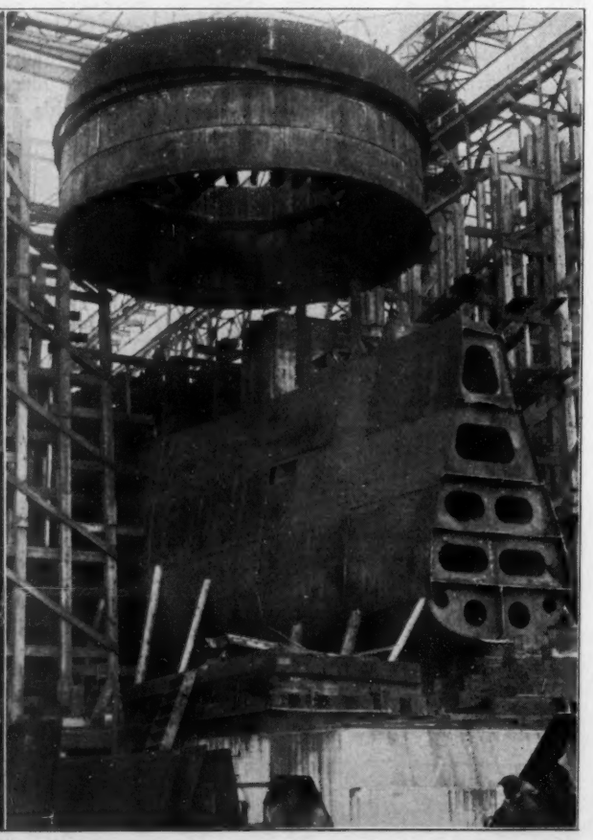

FIG. 4—SECTIONS WEIGHING ABOUT 40 TONS ARE CUT. FIG. 5—REMOVING A TURRET FROM U. S. S. INDIANA AT BROOKLYN NAVY YARD

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields of Enterprise

C. J. MAAS, recently elected president of the Judson Mfg. Co., San Francisco, manufacturer of open-hearth ingots, plates, shapes, etc., formerly was assistant secretary of the company. He succeeded the late H. E. Bothin. Mr. Maas was born in Eau Claire, Wis., in 1897, going to California in 1904. He was associated with Mr. Bothin in the Bothin Real Estate Co. from 1913 to 1917, joining the Judson company in the latter year. The majority of the production heads of the Judson company have been associated with the company for many years, some since shortly after the incorporation of the company in 1882.

* * *

George F. Downs and J. E. McLurg recently were appointed directors of the British Empire Steel Corp.

* * *

John Sherman Hoyt has been elected a member of the executive committee of the American Car & Foundry Co., New York, succeeding the late Colonel H. Rieman Duval.

* * *

C. F. Blue Jr. has been elected a director and vice president of the Climax Molybdenum Co., general offices 61 Broadway, New York, with headquarters in Pittsburgh.

* * *

W. Howard Kane, formerly connected with the Sheeler-Hemsher Co., Philadelphia, founder, has been made general manager of the McHatton Foundry Co., of that city.

* * *

Dr. E. S. Moore of the University of Toronto, Toronto, Ont., has been commissioned by the Ontario department of mines to make an investigation of the iron ranges beginning north of Sault Ste. Marie.

* * *

R. M. Taylor has resigned his connection with Hickman Williams & Co., effective April 1. He was with that company for seven years, five in the Pittsburgh and two in the Philadelphia office.

* * *

William L. Hoffman has been appointed Philadelphia district sales agent for the Baltimore Tube Co., Inc., Baltimore, manufacturer of seamless brass and copper tubing and other brass and copper products. Mr. Hoffman has headquarters at 1504 West Venango street, Philadelphia.

* * *

C. H. Reynolds, recently elected secretary of E. H. Welker Co., Inc., Detroit, machine tool, equipment, steel furniture and manufacturers' representative, has been associated with the company for the past eight years. He also was made district sales manager recently for the Le Moyne Steel Co.

C. J. MAAS

* * *

John F. Hennessey for several years salesman for the Bethlehem Steel Co. at Chicago has been appointed sales agent for the company in the Cincinnati district with headquarters at Cincinnati.

* * *

B. H. Garhart, assistant purchasing agent, Petroleum Iron Works, Sharon, Pa., has been appointed purchasing agent for the Kansas City division of the company. Mr. Garhart will assume his new duties April 15.

* * *

H. L. Gilliam, formerly district sales manager at Norfolk, Va., for the Wood Shovel & Tool Co., Piqua, O., manufacturer of shovels, spades, drainage tools, etc., recently has been appointed in charge of the New York office at 50 Church street. Mr. Gilliam will serve both the hardware and railroad trade in that territory which formerly were handled by J. C. McCarty & Co. and H. H. French.

* * *

Louis G. Henes, San Francisco and Los Angeles, machine tool dealer, announces that Charles S. Taylor, formerly in charge of the Los Angeles office, has resigned. William Macbride and Earl Casey have been added to the sales staff in Los Angeles.

* * *

H. C. Richardson has been named district sales manager at Cleveland for the Donner Steel Co., Buffalo, N. Y. Mr. Richardson has been for the past 18 months with the Donner company. Before that he was identified with the United Alloy Steel Corp. He has his office in the Union Trust building.

* * *

W. C. Beschormann was elected manager of the Cincinnati plant of the National Lead Co., at a meeting of the directors at New York last week. He succeeds the late E. C. Goshorn, who died two months ago. W. A. Dail, sales manager, at the Cincinnati office succeeds Mr. Beschormann as assistant manager.

* * *

Charles Longenecker, recently associated with the Combustion Engineering Corp., New York, formerly was sales engineer with the Bonnot Co., Canton, O. Mr. Longenecker has been identified with the industrial application to boilers and furnaces of pulverized fuel. He will be connected with the industrial department of the Combustion corporation which is headed by H. D. Savage.

* * *

C. E. Reese, recently appointed general manager of the Bluefield Gas & Power Co., Bluefield, W. Va., had been connected with the Westinghouse Electric & Mfg. Co., as section head, stoker sales and publicity department, Philadelphia. Mr. Reese is known as a gas and electrical engineer, and is an associate member of the American Institute of Electrical Engineers, member of the American Gas association, and other societies. He formerly was assistant engineer with the Illinois Public utilities commission working in Springfield and Chicago and later was associate editor of the *Gas Age*, and *Gas Age Record* and editor of the *Gas Engineering & Appliance Catalogue*.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

J. O. EATON, president of the Eaton Axle & Spring Co., Cleveland, recently was elected to the board of directors of the National Acme Co., that city, to succeed W. F. McGuire, New York, resigned. A. W. Henn was re-elected president at the recent annual meeting, and N. S. Rathburn was re-elected secretary and assistant treasurer. N. W. Foster who has been assistant treasurer at Windsor, Vt., was elected vice president and general manager and will have his headquarters at Cleveland. O. L. Henn, formerly at the Windsor plant was made general superintendent of the Cleveland plant on Stanton road. Both Mr. Henn and Mr. Foster were added to the board of directors. Other directors were re-elected including C. A. Eaton, E. C. Henn, A. W. Henn, A. W. Hopkins, W. R. Mitchell, N. S. Rathburn and E. L. Geisner.

* * *

G M. EARLE recently was elected president of the Wise McClung Co., New Philadelphia, O., manufacturer of sweepers, etc. N. W. Senhauser was elected vice president, Charles E. Spence secretary and treasurer and W. A. Wise general manager. The officers and E. L. Wenger, W. E. McClung and M. Widder were chosen directors.

* * *

STEAM automobiles, trucks, cars and motors will be produced by the Brooks Steam Motors, Inc., Cleveland, recently incorporated for $5000. A plant is expected to be purchased and production begun within three months. The company formerly built steam motors and products in Canada. O. J. Brooks, Wade Park Manor, Cleveland, is interested. Frank E. Baker, Cleveland, is attorney for the company.

* * *

A SHIP repair plant costing approximately $3,000,000 will be erected in Hawaii, according to recent announcement by J. J. Tynan, vice president and general manager of the Bethlehem Shipbuilding Corp. Mr. Tynan predicts the trebling of volume of shipping touching Honolulu within the next 10 or 20 years. The Bethlehem corporation plans moving a floating drydock now at Alameda, Cal., to Honolulu as an initial move in the establishment of a plant in Hawaii.

* * *

WILLIAM W. COLEMAN was re-elected president of the Bucyrus Co., South Milwaukee, manufacturer of steam shovels, etc., at a recent meeting of the stockholders. Edmund K. Swigart was re-elected vice president, George A. Morison secretary and Dan P. Eells treasurer. Walter H. Crittendon and William B. Given, New York, were elected to the board of directors

* * *

INCREASE in capitalization from $20,000 to $30,000 was effected recently by the Sterling Bolt Co., Chicago, jobber of bolts, nuts, screws, rivets, etc., to enlarge the scope of the company's operations. In addition to the Chicago warehouse at 707 West Van Buren street, a plant is operated at 193 Mercer street, New York. The executive personnel of the company is composed of Harry Dorph, Edgar B. Miller and Charles C. Gordon.

* * *

STEEL PRODUCTS CO., Cleveland, recently received a contract from the Buick Motor unit of the General Motors Corp. to supply the entire Buick requirements of drag links and tie rods. These parts will be used in connection with the 4-wheel brake equipment of that automobile. The Steel Products Co. consequently is in the market for about 3,000,000 feet of steel tubing, according to President C. E. Thompson. The order received by the Steel company was one of the largest of its kind ever made.

* * *

STOCKHOLDERS of Consolidated Steel & Iron Corp., Terre Haute, Ind., have elected officers and directors for the ensuing year as follows: F J. Stuart, chairman of the board; H. A. Brereton, president and treasurer; E. J. Shroeder, vice president; and F. F. Rimsa, secretary and assistant treasurer. Directors are A. B. Neumann, Chicago; A. T. Hollenbeck, Jefferson City, Mo.; W. R. Mayne, St. Louis, Mo.; L. E. Waterman, Terre Haute; N. G. Wallace, Terre Haute; A. R. Fraser, Cleveland; H. A. Sicker, West Lafayette; E. J. Rose, Chicago; August Borchelt, St. Peter, Ill.; S. C. McKeen, Terre Haute; George J. Nattkemper, Terre Haute. The Consolidated Steel & Iron Corp. has taken over the properties of the Hoosier Rolling Mills Co. and Terre Haute Auto Spring Co., and at present is engaged in a movement to finance the completion of the extensions at Steelton, near Terre Haute.

* * *

THE W. K. Henderson Iron Works & Supply Co., Shreveport, La., plans construction of a modern foundry unit just outside of the limits of that city. This company has enjoyed such rapid expansion during the last three or four years that it has outgrown entirely its present facilities. With the removal of the foundry department, the machine shop, mill supply department and saw mill assembly department will be able to expand into the buildings at present occupied by the foundry. Complete new modern equipment will be installed throughout, the machinery contemplated including two electric steel furnaces and two gray iron cupolas. Frank D. Chase, Inc., Chicago, is in charge of design and layout and the building will be constructed by the Leonard Construction Co., that city. The Henderson company manufactures steel fittings, pumps, steam engines, tools, elevators, and various other oil field and pipe line equipment.

* * *

SURFACE Combustion Co., New York, has been acquired by the Combustion Utilities Corp., that city. The Surface Combustion Co. has patents on control apparatus, burner designs and automatic proportioning devices. Both companies will retain their individual identities. The Combustion Utilities Corp. announces that it intends to develop intensely its line of recuperative furnaces for the steel, ceramic and malleable iron industries. F. W. Manker, sales manager, will continue in charge of this division. Henry O. Loebell, general manager of the Utilities corporation, will become president of the Surface company through the resignation of Robert Lesley, who will be a director of the consolidation. W. M. Hepburn continues as vice president in charge of sales and E. E. Basquin, vice president and general manager of the Surface company, will remain in that capacity.

Malleable Association Accused

Indictment in Federal Court at Cleveland Names Forty-seven Companies Making Castings as Alleged Violators of Antitrust Law—Defendants Surprised After Receiving Assurances Their Organization Was Valid

AN INDICTMENT charging violation of the federal antitrust law was returned last Thursday by the grand jury in the United States district court at Cleveland, against officers and members of the American Malleable Castings association. It is alleged that since Jan. 1, 1917, the defendants have conspired to eliminate competition and control prices of their products, in interstate commerce. Forty-seven companies, including some of the largest producers of malleable castings in the United States are named in the indictment, as are 47 individuals identified with their respective companies as officers or managers. The list also includes Robert E. Belt, secretary of the association, which has headquarters in Cleveland.

The indictment states that the corporations named have manufactured approximately 500,000 tons of malleable castings annually, or approximately 75 per cent of all such castings made in the United States. The companies have plants in the principal foundry centers in the East and Middle West and it is said that a great volume of the business has been carried on in interstate commerce. The indictment is brief, and the principal paragraph states:

"The defendants have carried on such interstate commerce in accordance with, and pursuant to, an understanding and agreement between said corporations to eliminate competition among themselves as to prices, terms and conditions of sale, and as to customers; and, by agreement have from time to time fixed excessive and noncompetitive prices to be charged by all of them for said castings, and have accordingly quoted prices and made sales of said castings at such prices so fixed."

Another paragraph bears directly on the activities of the trade association, setting forth this claim:

"The manufacturers have maintained an association to collect and receive from each of its members information as to the details of such member's business, and to distribute such information among all the members for their use in avoiding and preventing breaches of said agreements."

The names of the individuals indicted and their companies or affiliations follows:

Robert E. Belt, secretary American Malleable Castings association, Cleveland; S. L. Smith, National Malleable & Steel Castings Co., Cleveland; C. L. Berger, Eastern Malleable Iron Co., Bridgeport, Conn.; P. J. Schilling, Eastern Malleable Iron Co., Troy, N. Y.; J. C. Haswell, Dayton Malleable Iron Co., Dayton, O.; Frederick V. Griesman, Albany Malleable Iron Co., Albany, N. Y.; H. B. Parker, Albion Malleable Iron Co., Albion, Mich.; Carl F. LaMarche, American Malleable Castings Co., Marion, O.; A. J. Ricker, Badger Malleable & Mfg. Co., South Milwaukee, Wis.; C. S. Anderson, Belle City Malleable Iron Co., Racine, Wis.; John T. Llewellyn, Chicago Steel Castings Co., West Pullman, Chicago; George H. Thompson, Columbus Malleable Iron Co., Columbus, O.; H. C. Smith, Danville Malleable Iron Co., Danville, Ill.; Donald E. Willard, Decatur Malleable Iron Co., Decatur, Ill.; Louis J. McGrath, Thomas Devlin Mfg. Co., Philadelphia; E. E. Walker, Erie Malleable Iron Co., Erie, Pa.; O. L. Hollister, Federal Malleable Co., West Allis, Wis.; Frank J. Lanahan, Fort Pitt Malleable & Gray Iron Co., Pittsburgh; Fred Frazer, Frazer & Jones Co., Syracuse, N. Y.; J. R. Steneck, Illinois Malleable Iron Co., Chicago; W. V. Hughes, Iowa Malleable Iron Co., Fairfield, Ia.; E. C. Howell, Kalamazoo Malleable Iron Co., Kalamazoo, Mich.; Joseph P. Kennedy, Kennedy Corp., Baltimore; E. J. Fitzgerald, Laconia Car Co., Laconia, N. H.; John G. Osborne, Lakeside Malleable Castings Co., Racine, Wis.; H. Lloyd Hess, Lancaster Foundry Co., Lancaster, Pa.; Edwin F. Leigh, Marion Malleable Iron Works, Marion, Ind.; Stephen J. Meeker, Meeker Foundry Co., Newark, N. J.; R. R. Fauntleroy, Moline Malleable Iron Co., St. Charles, Ill.; Frank J. Ottis, Northern Malleable Iron Co., St. Paul; William C. McMahon, Northwestern Malleable Iron Co., Milwaukee; John B. Coates, Pittsburgh Malleable Iron Co., Pittsburgh; H. L. Steeves, Rhode Island Malleable Iron works, Hillsgrove, R. I.; F. C. Rutz, Rockford Malleable Iron Works, Rockford, Ill.; G. F. Meehan, Ross-Meehan Foundries, Chattanooga, Tenn.; Henry Niedringhaus Jr., St. Louis Malleable Castings Co., St. Louis; Todd T. Zachard, Standard Wheel Co., Terre Haute, Ind.; A. E. Shaw, Stanley G. Flagg & Co., Inc., Philadelphia; Rupert A. Nourse, Stowell Co., South Milwaukee, Wis.; T. W. Ludlow, Springfield Malleable Iron Co., Springfield, O.; Edwin C. Donaghy, Temple Malleable Iron & Steel Co., Temple, Pa.; Frank J. Eppele, Trenton Malleable Iron Co., Trenton, N. J.; F. C. Moore, Vermilion Malleable Iron Co., Hoopeston, Ill.; Harry C. Wanner, Wanner Malleable Castings Co., Hammond, Ind.; W. P. Westenberg, Wisconsin Malleable Iron Co., Milwaukee; P. A. Kern, Zanesville Malleable Co., Zanesville, O.; J. L. Simmon, Union Malleable Iron Co., East Moline, Ill.; E. T. Ward, Warren Tool & Forge Co., Warren, O.

Association Denies Indictment Charges

DENYING the charges contained in the federal indictment against the American Malleable Castings association, and declaring the association will insist on an early trial of the issue, prominent members have outlined in detail for IRON TRADE REVIEW the scope of the association's work. They say that the association's representatives conferred with the government trade commission and the association "was given a clean bill of health." When officers of the department of justice visited the office of the association every opportunity was given them to determine exactly what was being done. The work of the association has been principally along the line of technical development. It is said officially:

"At various times the regular officers of the department of justice have visited the office of the association in the usual course of business and have always been accorded every courtesy and opportunity to make any investigation or examination they desired, the last being two years ago. In addition to that, the association in the year 1916 conferred with the federal trade commission with reference to their methods and were given a clean bill of health, and the association has frequently had the same experience in referring its plan to various governmental departments upon subsequent occasions in an effort to be assured it was on the right track. However, the association's most important activities since the year 1912 have been connected with the chemical and metallurgical development of its output.

"Early in the year 1912 it secured the services of the noted metallurgical engineer, Prof. Enrique Touceda,

to make an investigation of the conditions existing in the various plants of the membership as well as an examination of the quality of the output in all their plants. As a result of this examination it was held that a great deal of good could be accomplished by establishing a permanent laboratory which was done at Albany, N. Y., and later on, members were compelled to send in test bars from every heat to be analyzed and tested, the result being reported to the membership every month.

"The result of all the work of the association in this connection has been so greatly to improve the various processes involved in the manufacture of high grade malleable castings that the material that has been turned out has been of a character and structure that gave it great strain resisting power as well as extraordinary ductility.

"It has been frequently stated by members of the association that there is not a single manufacturer in existence who would have believed in 1922 that a material comparable with that now made would ever have been possible, and furthermore that the average tensile strength of all the malleable being made in 1924 has been more than doubled since 1912, and the elongation more than tripled since that time and this has been entirely due to the laboratory work of the association and its membership.

"In addition, this association has employed competent specialists, men of experience, who visited at regular intervals, all the plants of the association to inspect, test and criticize the quality of the castings made. As a net result of this, the quality of the material has so commended itself to popular favor, that the industry has grown to over 200 malleable plants in the United States, but only 60 belong to the association and they are making probably about 50 per cent of the total product, and only 47 of the 60 are covered in these proceedings. But the organization never has hesitated to publish in the trade papers for the information of everyone, as well as by papers and addresses before engineering societies, the result of all their experiments and these have been as carefully studied in Europe as in America.

"One very eminent manufacturer, whose name is a household word in this country and whose output goes to a very large number of malleable plants, made a definite statement that the development of the automobile industry, which is the largest industry in the United States, would not have been possible if it had not been for the improved quality of malleable castings which has come about as a direct result of all this metallurgical development, and incidentally, the automobile industry has become the largest consumer of malleable in the United States using now a greater tonnage than the railroads.

"Furthermore, as a result of the association's careful work there has come a greater degree of safety to those who travel on railroads, where malleable is used extensively. There is advantage to the farmer where the improved product has resulted in cheapened process of the manufacture of agricultural implements by using material lighter in quality but with greater power of resistance to strain or shock.

"Now, the association expresses itself as being extremely anxious to have the question at issue with the department of justice settled as quickly as possible and is going to insist upon an early court hearing."

New Company Will Make Cold-Finished Steel

Organized with a capital of $100,000 by M. P. Simpson, president; William Elmes, vice president; Homer H. Swaney, treasurer, and F. H. Guppy, secretary, the Superior Steel Products Co. will manufacture cold-finished steel in standard and special shapes. A site has been purchased at Monaca, Pa., about 800 feet long adjoining the New York Central railroad on which erection of the first unit of the company's new plant will start immediately, to be 60 x 300 feet and of modern fireproof construction. It will be fully equipped with cranes and other material handling equipment and so arranged that additions can be conveniently made at a minimum expense. Messrs. Simpson, Elmes and Guppy were until recently affiliated with the Moltrup Steel Products Co. and formerly were associated with the Standard Gauge Steel Co., both of Beaver Falls, Pa. Mr. Swaney is a member of the legal firm of Martin & Swaney, Beaver Falls.

Obituaries

JOHN G. A. LEISHMAN, first president of the Carnegie Steel Co. and a pioneer of the American steel industry, died March 27 in his hotel in Monte Carlo. He was in the diplomatic service from 1897 to 1913, as American minister to Switzerland and Turkey, and ambassador to Turkey, Italy and Germany. He was born in Pittsburgh in 1857 and he spent practically all of his early life in that city where he amassed his fortune. Mr. Leishman became vice president of Carnegie Brothers & Co., Ltd., in 1886, when he was 29 years old, and became the first president of the Carnegie Steel Co. after its incorporation. He retired at the age of 40 and for 16 years thereafter represented his country at a number of different foreign capitals. President McKinley named him envoy extraordinary and minister plenipotentiary to Switzerland in 1897 and he resigned from the Carnegie company at that time. In 1900 Mr. Leishman was sent from Switzerland to Turkey with the same rank. His rank was raised in 1906 to ambassador extraordinary and plenipotentiary, and he was continued in this office until 1909, when he was sent to Italy. In 1911 he was ordered to Germany to serve as ambassador.

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Louis Paper, president of Paper Calmenson Co., St. Paul, iron and steel scrap dealer, died in that city March 6.

* * *

William B. Scaife, aged 55, vice president, general manager and director of the William B. Scaife & Sons Co., Pittsburgh, plate construction, died suddenly March 28 at Palm Beach, Fla. He was born in the Northside, Pittsburgh, and was graduated from Cornell university in 1892. Following his graduation he became associated with William B. Scaife & Sons Co.

* * *

Luther G. Turner, former president and general manager of the Turner & Seymour Mfg. Co., Torrington, Conn., manufacturer of hardware, died recently at Southern Pines, N. C. He was 78 years old.

* * *

Sidney L. E. Rose, for 15 years an engineer in the illuminating engineering laboratory of the General Electric Co., Schenectady, N. Y., died March 17 in St. Louis. He was born in Tamworth, Ont., in 1877 and was graduated from Queens university in Ontario in 1903 and in 1905 joined the General Electric Co. at Lynn, Mass. Two years later he was transferred to the illuminating engineering department and, when this department was moved to Schenectady in 1909, he came with it.

* * *

C. L. Prince, for 25 years associated with the General Electric Co. in iron foundry work at Schenectady, N. Y., and one of the pioneers in the American Foundrymen's association, died in that city March 20 at the age of 67. Mr. Prince was born in Georgetown, Mass., and was graduated from the Ridgewater State normal school and the Worcester Polytechnical institute. He went to Schenectady 25 years ago as superintendent of the General Electric Co.'s iron foundry. He was a thirty-second degree Mason and a knight templar.

Machine Tool Market Is Quieter

Dullness Characterizes Buying in All but New England District—Good Quantity of Single Machine Orders Being Placed but Large Buying Is Lacking—Crane Demand Generally Featureless and Sales Are Few

MACHINE tool buying is quieter and the equipment market generally is dull. Inquiry is light and scattered, few districts reporting a continued good volume of prospective business. Closing of several large pending lists last week stimulated buying in New England but sales in other territories were not on a level with those of January and February. Curtailment of production schedules in some industries has furthered the hesitancy which characterizes the machine tool market. Governmental investigations are reported by some interests to have exerted an influence of uncertainty, making buyers proceed with caution in closing on requirements.

Railroads continue to delay in closing on large lists which have been in the market for some weeks. The Canadian National has made further purchases but no action has been taken by the Southern or Santa Fe. New York Central closed on several machines last week. The Pennsylvania railroad is reviving its lists for shops at Mingo Junction, O., and Verona and Conway, Pa.

Industrial buying still is limited largely to single tool purchases. Two sales of interest involved 10 machines for the General Fire Extinguisher Co., Providence, R. I., closed by a turret manufacturer and six for the Gilman Mfg. Co., East Boston, Mass. Carnegie Steel Co. has out a large list for its plant at Homestead, Pa., but action is not expected to be taken soon. American Sheet & Tin Plate Co. is in the market.

The crane market is quiet with the recent order of the Youngstown Sheet & Tube Co. as a feature. This company awarded seven cranes to the Morgan Engineering Co. Inquiries are coming out in fair volume with prospective business especially heavy in the Pittsburgh district.

Used equipment dealers are meeting but a fair demand although some report business at a better level than for some time past.

Railroads Postpone Closing on Large Lists

NEW YORK, April 1.—Dullness characterizes the local machine tool market. Inquiry is light and scattered, while buying is restricted largely to single machines. The Southern railroad has done little as yet with its large list and although the General Electric Co. is reported to have taken action on several fabricating machines for installation at West Philadelphia, this has not been definitely confirmed.

Among the scattered orders last week are a 20-inch vertical boring and turning mill for the West Lynn plant of the General Electric Co.; a 400-ton wheel press and a 5-foot radial drill for the Canadian National railroad; a 300-ton wheel press for the Cedar Rapids & Iowa City railways; a 36-inch planer for the National Plate Glass Co., Granite City, Ill., and an 800-pound air hammer for the United States District Engineer, Huntington, W. Va., this latter order going to the Massillon Foundry & Machine Co., Massillon, O. The Canadian National has made further purchases, including a spring testing machine for one of its Canadian plants and is still in the market for several machines.

Trading in the quarter just closed has fallen far short of that in the corresponding period of last year. As compared with the immediately preceding quarter, business has been about on a parity, in the experience of most sellers.

Two interesting sales have been booked by a turret manufacturer, one involving 10 machines for the General Fire Extinguisher Co., Providence, R. I., and the other, six for the Gilman Mfg. Co., East Boston, Mass.

The crane market is rather featureless, with little in the way of buying or inquiry, this latter being particularly true in the case of locomotive cranes.

Market Is Dull

CLEVELAND, April 1.—Machine tool buying in this district is dull with few orders for large machines being closed last week. Inquiries have decreased for many lines of tools and buyers show no inclination to purchase against present needs. Curtailed automotive production schedules are reported as already effecting the buying of such manufacturers. Buying is being done mostly by out-of-town manufacturers, sales of tools to local companies being practically negligible.

Used equipment dealers report fair business, some having heavier sales than the past few months but the general trend is toward quietness.

Inquiries for cranes are fewer as are sales. Featuring this class of equipment was the award of a car dumper by the New York Central railroad to McMyler-Interstate Co.

Large Sales Stimulate Market

BOSTON, April 1.—Closing of several large pending machine tool projects last week gave considerable stimulus to the market. An eastern Massachusetts manufacturer placed orders for production equipment amounting to $60,000 to $70,000. A Worcester, Mass., manufacturer bought a screw machine and other tools totaling between $4000 and $5000. Another Massachusetts manufacturer placed orders for between $15,000 and $20,000 worth of tools.

Scattered small orders continued at about the same rate as for previous weeks and several leading used tool dealers reported an encouraging turnover. The increased sales are at least in part a coincidence rather than an expression of improved conditions.

Manufacturers of automobile parts express a more cautious attitude than at any time this year, this being based on reports that curtailment is pending in the automotive industry. Building activity throughout New England is pronounced and dealers in equipment going directly to this trade report unusually active conditions. Industrial motor sales have improved. Pipe bending and cutting tools are in strong demand and sales of this equipment last week in Boston nearly doubled those of the previous week. Prices hold firm all down the line.

Inquiry Much Lighter

CHICAGO, April 1.—Inquiry for machine tools has been decidedly light in the past week although some machinery houses report they have done fair business off their floors. Several manufacturers, makers of automobile

parts, who were about to close for new equipment, have received cancellations from their contractors and hence have deferred their purchases of machinery. The Pullman Co. has placed a forging machine. An Iowa general repair shop has placed a drill press, a milling machine, a lathe and a 2-spindle ball bearing drill. A repair shop in Indiana has placed a bolt threader turret lathe, screw machine and a shaper. The Atchison, Topeka & Santa Fe railroad has not yet placed any of the tools for which it inquired; it is understood that Pacific coast machinery houses are active in seeking this business. The inquiries for machine tools for several South Chicago steel mills have not yet been closed. The spotty character of the machinery trade is evidenced by the fact that some houses did more business in March than in either January or February, while other houses experienced the poorest month since 1921.

Inquiries Fairly Active

PITTSBURGH, April 1.—Quietness in orders for machine tools and equipment is noted although inquiries are fairly active. Sellers are working upon numerous lists and single tool installations; the lists being both new and revived. One of the largest now pending is that of the Carnegie Steel Co. for Homestead, Pa., calling for one each 14, 18, 20, 24 and 28-inch lathes; two each boring mills and radials; one each bevel-gear generator, turret lathe, slotter, shaper, planer, post-slotter, hack saw and keyway milling machine. The Carnegie company bought a motor-driven saw for Homestead, Pa., last week but considerable delay will probably be encountered in the placing of the larger list since separate bids in triplicate have to be filed on each machine and these all have to be tabulated.

The Pennsylvania railroad is reviving its lists for Mingo Junction, O., and Verona and Conway, Pa., through the Philadelphia purchasing office, one dealer here receiving requests for revised bids on four separate items. Sales last week were confined to a few single items. One house sold a 30-inch and a 12-inch belt driven lathe to one buyer and a small shear to another. The American Sheet & Tin Plate Co. recently purchased several shears and now is in the market for a milling machine. It is expected to be a constant buyer all through the spring and summer. The Vanadium Alloy Steel Corp., Latrobe, Pa., recently purchased a straightener.

Considerable road work is under way in Pennsylvania and numerous shovels with a few locomotive cranes probably will be purchased by contractors. Crane orders this week are scarce although inquiries are numerous, more being before the crane builders than at any time in several months. The largest crane order noted recently is that of the Youngstown Sheet & Tube Co., for seven, going to the Morgan Engineering Co.

Market Still Is Quiet

CINCINNATI, April 1.—Another quiet week has been passed by the machine tool trade. Orders all have been small. Encouragement is felt over the outlook and it begins to look as if several railroads soon will start to buy groups of tools for various shops against their recent lists, bids on which have been in process of tabulation for several weeks. While it is not expected that the second quarter will be as good as the first from a selling standpoint, sellers as well as manufacturers believe it will be better than the past month. Several of the small steel companies in this territory are planning to buy equipment or contemplate expansions of various sorts for which equipment will be purchased. Crane orders are not large. The Cincinnati River-Rail Terminal Co. is inquiring for a crane for its new terminal on the Ohio river. Electrical equipment manufacturers report business less.

Inquiries Are More Numerous

SAN FRANCISCO, March 29.—Machine tool and equipment sales in March exceeded those of February but the market as a whole has been quiet. Inquiries, in the last few days, have been more numerous and the trade is displaying more cheerfulness. The lack of rain in the southern part of the state this winter up to recently beyond doubt has been largely responsible for the conservative attitude assumed by buyers.

Sales have been confined almost entirely to installations of single tools. Included among sales reported was a 42-inch carwheel boring mill for the Sugar Pine Co., Fresno, Cal., awarded to the Pratt & Whitney Co., a 16 x 18 inch and an 18 x 10 lathe for the Hall-Scott Motor Car Co., Berkeley, Cal., secured by Louis G. Henes, an 18 x 8 lathe for a bay district user, awarded to Louis G. Henes.

Crane Awards and Inquiries of the Week

Orders Placed

Seven cranes including cranes of 10 and 20-ton capacity for the Youngstown Sheet & Tube Co., Youngstown, O., to the Morgan Engineering Co.

Two electric cranes, one 5-ton capacity and the other 2-ton, for the Vermont Marble Co., Proctor, Vt., to the Shaw Electric Crane Co.

Single Machine Orders

2½-ton handpower crane for the Clark Equipment Co., Buchanan, Mich., to the Whiting Corp.

110-ton electric traveling crane for the Columbia Power Co., Cincinnati, to the Whiting Corp.

200-ton locomotive hoist for the Clover Leaf railroad, to the Whiting Corp.

200-ton locomotive hoist for the Detroit Terminal railroad, Detroit, to the Whiting Corp.

10-ton electric traveling crane for the Drop Forge Co., Chicago, to the Whiting Corp.

5-ton electric traveling crane for the Illinois Car & Mfg. Co. Chicago Heights, Ill., to the Whiting Corp.

6-ton electric traveling crane for the city of Chicago, to the Whiting Corp.

5-ton handpower jib crane for the Central of Georgia railroad, Savannah, Ga., to the Whiting Corp.

10-ton crane for Cleveland contractor, to McMyler-Interstate Co.

23-ton crane for eastern public utilities company, to McMyler-Interstate Co.

5-ton soaking pit crane for the Allegheny Steel Co., Brackenridge, Pa., to the Morgan Engineering Co.

Soaking pit crane for the Wheeling Steel Corp., Wheeling, W. Va., understood to have been placed with the Alliance Machine Co.

5-ton high-duty crane for the Elyria Iron & Steel Co., Elyria, O., to the Pawling & Harnischfeger Co.

10-ton electric crane, 100-foot span, for plant at Pottstown, Pa., of the McClintic-Marshall Co., to the Shaw Electric Crane Co.

15-ton electric overhead crane, 21-foot span, for the Schenectady plant of the General Electric Co., to an eastern builder.

25-ton locomotive crane for the Los Angeles Gas & Electric Co., Los Angeles, to the American Hoist & Derrick Co.

40-ton used Industrial locomotive crane, 80-foot boom, for the Jobson-Gifford Co., New York to Philip T. King.

24-ton locomotive crane for the United Gas Improvement Contracting Co., Philadelphia, for installation at Syracuse, N. Y., to the Browning Co.

5-ton electric cage controlled crane, 46-foot, 6-inch span, for the Hoyt Metal Co., Granite City, Ill., to the Shepard Electric Crane & Hoist Co.

5-ton electric crane, 60-foot span for Genesee Bridge & Iron Co., Rochester, N. Y., to the Shepard Electric Crane & Hoist Co.

10-ton electric crane, 88-foot span, for the Shippers Car Line Co., Milton, Pa., to the Shepard Electric Crane & Hoist Co.

2-ton, single I-beam handpower crane, 33-foot span, for H. R. Goeller, Hillside, N. J., to the Chisholm-Moore Mfg. Co.

3-ton single I-beam crane, 21-foot, 7-inch span, with trolley, for the United States district engineer, Huntington, W. Va., for installation at Marietta, O., to Manning, Maxwell & Moore; 18 bidders quoted on this crane; H. D. Conkey & Co. submitted a low bid of $255, but it is understood this bid was thrown out because proposal was not strictly in accordance with specifications. Manning, Maxwell & Moore was the successful bidder, quoting $300, as compared with $750 quoted by the Penn Bridge Co., the high bidder.

Orders Pending

Twelve cranes for the Westinghouse Electric & Mfg. Co., Sharon, Pa.; revised bids asked on certain items.

Cranes for the National Tube Co., Gary, Ind.; still in abeyance.

Cranes for the new addition to the plant of the Westinghouse Airbrake Co., Wilmerding, Pa.; inquiry about to come out.

Cranes for various plants of the Carnegie Steel Co.; action deferred.

Two or three cranes for the Wheeling Steel Corp., Wheeling, W. Va.; bids being taken.

Cranes including a 75-ton ladle crane for the new open hearth furnace of the Republic Iron & Steel Co., Youngstown, O., now coming up for attention.

Recent Industrial Business Changes

THE Youngstown Sheet & Tube Co., Youngstown, O., has moved its San Francisco offices from 604 Mission street to the Sharon building, 55 New Montgomery street. James H. Gilhuly continues as district sales agent, but James H. Gilhuly Jr. has resigned and will remain at 604 Mission street, representing the Pittsburgh Valve & Fittings Co.

* * *

The Detroit Stoker Co., Detroit, is moving its foundry in Toledo, O., to Bowling Green, O. Operations have begun in the latter place.

* * *

L. F. Dengler Machine Co., Rochester, N. Y., has changed its name to the Colonial Tool & Die Corp.

* * *

Corrugated Bar Co. has moved its Milwaukee offices from the Wells building to 727-9 Merchants & Manufacturers bank building.

* * *

Lock Joint Pipe Co., Ampere, N. J., will open an office at Broad street west of the Belt Line railroad, Richmond, Va. H. W. Heath will be in charge.

* * *

Morris Lippens recently purchased a half interest in the property of General Machine Shop, Windsor court, Kewanee, Ill., from E. Arnold DeWitt.

* * *

Richards & Co., Stamford, Conn., manufacturer of artificial leather, have bought the plant of the Atlantic Insulated Wire & Cable Co., that city.

* * *

Perkins-McLaughlin Nail Co. is the new name of the New England Steel Products Co., 148 Purchase street, Boston, manufacturer of common wire nails, cut nails, etc.

* * *

Pickands Mather & Co., Cleveland, iron ore merchant, pig iron producer and lake transportation operator, is moving its offices to the twentieth floor of the Union Trust building from the Western Reserve building, where it has been located for 32 years.

* * *

Morgan Engineering Co., Alliance, O., builder of power plant, steel plant and special machinery and structural steel fabricator, has opened an office at 1433-4 Leader-News building, Cleveland, in charge of Charles H. Last, for the sale of fabricated structural steel products.

* * *

The United Engineers, Inc., Pittsburgh, is moving its offices on April 15 from 303 Wood street to 550 Century building, that city. Company specializes in design and detail of structural steel.

* * *

William J. Clucas, district manager of the Lancaster Steel Products Corp., subsidiary of the General Motors Corp., has moved his office from Buffalo to Cleveland, with headquarters in the Leader-News building in the latter city.

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Sale of the Peninsula Iron Works, Portland, Oreg., for a sum said to approximate $180,000 to M. E. Gleason, San Diego, Cal., and associates has been announced. Under the new organization Mr. Gleason is president.

* * *

L. O. Koven & Bro., Inc., 154 Ogden avenue, Jersey City, N. J., has taken over the copartnership of L. O. Koven & Bro., manufacturer of ranges, boilers, etc. G. H. Koven will remain as president, L. O. Koven as vice president and treasurer and William Schulmerich as secretary.

* * *

Barney Rosenthal, Menasha, Wis., dealer in scrap metals, used machinery, etc., has incorporated as Barney Rosenthal, Inc., capital stock $5000. H. and F. Rosenthal also are incorporators.

* * *

Ruggles-Klingemann Mfg. Co., 200 Devonshire street, Boston, recently was appointed exclusive New England representative of Uehling Instrument Co., Paterson, N. J., manufacturer of recorders and indicators and other power plant instruments.

* * *

The National Carbon Co. has purchased the buildings and grounds of the Standard Parts Co., Cleveland, according to M. W. Allen, works manager. The purchase price of the buildings and land was $625,000. It is understood the buildings will be used by the purchaser mainly for storage purposes, and space thus relieved at the carbon plant will be used to facilitate expansion in manufacturing.

* * *

The Boston and New York offices of the Electric Controller & Mfg. Co., Cleveland, are being combined. W. R. Yorkey, formerly in Boston, now will be district manager of the New York office. H. K. Hardcastle is district manager of the newly created Philadelphia branch office.

* * *

The Truscon Steel Co., Youngstown, O., has announced that the Hawaiian Island territory will, in the future, come under the jurisdiction of the San Francisco office. Charles Holloway, San Francisco manager, will leave shortly for the islands on an inspection trip for the company.

* * *

Plant of the American Bell & Foundry Co., Northville, Mich., has been sold to Parker & Genkins, Howell, Mich., who are organizing a company to operate the plant under the name of American Bell & Furnace Co. Frank Harmon was president of the old company, Charles Filkins, vice president; Ray Bogart, secretary and Frank Neal, treasurer.

* * *

Hayes Wheel Co., Jackson, Mich., will acquire the Hayes Motor Truck Wheel Co., St. Johns, Mich., the Albion Bolt Co., Albion, Mich., and the Morrison Metal Stamping Co., Jackson, Mich., following the recent approval of the merger by the stockholders of the Hayes company. An exchange of stocks will constitute the merger.

* * *

The Mechanical Supply Co., Inc., Battle Creek, Mich., recently incorporated for $100,000, has taken over the assets, good will, etc., of the Steel Age Mfg. & Supply Co., that city, jobber of mill supplies and machinery. E. D. Fitzpatrick, president of the new company, was founder and head of the Steel Age company. Harry P. Dunning, formerly of Edwards & Chamberlin Co., Kalamazoo, Mich., is vice president.

Warehouse Steel Prices

Quotations at Cents Per Pound at Leading Market Centers

STEEL BARS

Boston	3.515c
Buffalo	3.55c
Chicago	3.20c
Cincinnati	3.40c to 3.50c
Cleveland	3.36c
Detroit	3.35c
Los Angeles	3.75c
New York	3.54c
Philadelphia	3.47c
Pittsburgh	3.15c
San Francisco	3.75c
Seattle	3.50c
St. Louis	3.35c
St. Paul	3.45c

IRON BARS

Boston	3.515c
Buffalo	3.50c
Chicago	3.20c
Cincinnati	3.40c to 3.50c
Detroit	3.35c
New York	3.54c
Philadelphia	3.47c
St. Louis	3.35c

CONCRETE BARS

Chicago	2.75c to 3.00c
Cincinnati	3.50c to 3.60c
Pittsburgh	2.50c to 2.65c

SHAPES, STRUCTURAL

Boston	3.615c
Buffalo	3.65c
Chicago	3.30c
Cincinnati	3.50c to 3.60c
Cleveland	3.46c
Detroit	3.45c
Los Angeles	3.85c
New York	3.64c
Philadelphia	3.57c
Pittsburgh	3.25c
San Francisco	3.60c
Seattle (large shapes)	3.60c
St. Louis	3.45c
St. Paul	3.55c

PLATES

Boston	3.615c
Boston, 3/16-inch	3.04c
Buffalo	3.65c
Chicago	3.30c
Cincinnati	3.50c to 3.60c
Cleveland	3.46c
Detroit	3.45c
Detroit, 3/16-inch	3.45c
Los Angeles	4.00c
New York	3.64c
Philadelphia	3.57c
Philadelphia, 3/16-inch	3.82c
Pittsburgh	3.25c
San Francisco	3.75c
Seattle	3.50c
St. Louis	3.45c
St. Paul	3.55c

NO. 10 BLUE ANNEALED SHEETS

Boston, 3/16-inch	4.515c
Buffalo	4.30c
Chicago	4.00c
Cincinnati	4.10c
Cleveland	3.60c to 4.06c
Detroit	4.15c
Los Angeles	5.00c
New York	4.34c
Philadelphia	4.10c
San Francisco	5.00c
Seattle	5.00c
St. Louis	4.10c
St. Paul	4.25c

NO. 28 BLACK SHEETS

Boston	5.00c
Buffalo	5.00c
Chicago	4.70c
Cincinnati	4.90c
Cleveland	4.50c to 4.65c
Detroit	4.85c
Los Angeles	6.20c
Philadelphia	5.15c
New York	4.85c
San Francisco	5.80c
Seattle	6.00c
St. Louis	4.75c
St. Paul	4.95c

NO 28 GALVANIZED SHEETS

Boston	6.00c
Buffalo	6.10c
Chicago	5.60c
Cincinnati	5.90c
Cleveland	5.60c to 5.80c
Detroit	6.00c
Los Angeles	7.00c
New York	5.85c
Philadelphia	6.25c
San Francisco	6.50c
Seattle	7.00c
St. Louis	5.75c
St. Paul	5.75c to 6.00c

BANDS

Boston	4.315e
Buffalo	4.35c
Chicago	3.95c
Cincinnati	4.00c to 4.10c
Cleveland	4.01c to 4.16c
Detroit	4.10c
Los Angeles	4.65c
New York	4.39c
Philadelphia	4.27c
Pittsburgh	3.95c
San Francisco	4.50c
Seattle	4.50c
St. Paul	4.20c

HOOPS

Boston	5.80c
Buffalo	4.65c
Chicago	4.55c
Cleveland	4.01c to 4.16c
Detroit	4.95c
New York	5.19c
Philadelphia, 1 inch and wider 20 gage and heavier	4.27c
Pittsburgh	3.95c
Seattle	5.50c
St. Paul	4.80c

COLD FINISHED STEEL

Boston (rounds)	4.35c
Boston (shapes)	4.85c
Buffalo (rounds)	4.45c
Buffalo (shapes)	4.95c
Chicago (rounds)	4.00c
Chicago (shapes)	4.50c
Cincinnati (rounds)	4.25c
Cincinnati (shapes)	4.75c
Cleveland (rounds)	4.10c
Cleveland (shapes)	4.60c
Detroit (rounds)	4.30c
Detroit (shapes)	4.80c
Los Angeles (rounds)	5.60c
New York (rounds)	4.40c
New York (shapes)	4.90c
Philadelphia (rounds)	4.35c
Philadelphia (shapes)	4.85c
Pittsburgh (rounds)	4.05c
Pittsburgh (sq. hex and flats)	4.55c
San Francisco (rounds)	5.50c
Seattle (rounds)	5.00c
St. Paul (rounds	4.25c

WELDED PIPE

Discounts from warehouse, New York City

Standard Steel Pipe

	Black	Galvanized
¼-⅜-inch butt	—31	+ 2
½-inch butt	—41	—24
¾-inch butt	—46	—32
1/3-inch butt	—48	—34
3½-inch lap	—44	—30
7-8-inch lap	—41	—11
9-10-inch lap	—35	— 8
11-12-inch lap	—34	— 6

Wrought Iron Pipe

	Black	Galvanized
¼-⅜-inch butt	+44	+78
½-inch butt	— 4	+19
¾-inch butt	—11	+ 9
1-1½-inch butt	—14	+ 6
2-inch lap	— 5	+14
3-6-inch lap	—11	+ 6
7-12-inch lap	— 3	+16

New Construction and Enterprise

ALBANY, ALA.—Decatur Cornice & Roofing Co. is installing new machinery for ornamental iron work. New buildings were completed recently in expansion of company.

BIRMINGHAM, ALA.—Air Reduction Sales Corp. will begin construction shortly of a $500,000 oxygen plant, according to E. F. Lindgran, southeastern manager. Plans have been completed and most of the new machinery ordered.

HOLT, ALA.—The local branch of the Central Iron & Coal Co. and Central Foundry Co. will be enlarged with a 140 x 420-foot addition to No. 3 pipe foundry. Another cupola house will be provided, 40 x 60 feet. Ingalls Iron Works Co., Birmingham, has been awarded structural contract for the additions.

RICHMOND, CAL.—Atchison, Topeka & Santa Fe railroad contemplates improvements including additions to wharf facilities and shops.

SAN FRANCISCO—D. O'Neill, 273 Mission street, has plans for constructing 2-story machine shop on Natoma street near Third street. J. E. Kraft & Sons, Phelan building, architect.

WALLINGFORD, CONN.—American Fork & Hoe Co., Cleveland, had its local plant damaged by fire recently following explosion of a kerosene engine.

WATERBURY, CONN.—The Plume & Atwood Mfg. Co. has completed plans for erection of a $130,000 5-story, 50 x 150-foot building for the manufacture of brass and copper products.

WATERBURY, CONN.—The Connecticut Light & Power Co., subsidiary of the Hartford Electric Light Co., Hartford, has increased its capital from $3,750,000 to $4,750,000 and will use the portion of the proceeds for extensions and additional equipment.

WEST HARTFORD, CONN.—The Standard Metal Specialty Co., Inc., has been incorporated with $20,000 capital.

BRADENTOWN, FLA.—The largest sawmill in this district was damaged by fire recently with loss estimated at $300,000, of which $200,000 represented machinery and equipment, according to R. L. Dowling & Son, owner. Reconstruction will start at once.

BELLEVILLE, ILL.—Karr Range Co., Seventh and Harrison streets, has been incorporated with 1000 shares no par value stock to manufacture and deal in all kinds of ranges, by Adam, Katherine and Edward Karr.

CHICAGO—Mid City Machine Co., 615 West Kinzie street, has been incorporated for $4000 to manufacture and deal in machinery, tools, dies, etc., by William Perry, Samuel Blair and Samuel Babitzky.

CHICAGO—Field Burner Sales Corp., 4659 North Kedzie avenue, has been incorporated for $1000 to manufacture and deal in heating apparatus and accessories, by Allen P. Houston, Edward A. Field and Neil R. Walker.

CHICAGO—Illinois Metal & Refining Co., 2325 West Grand avenue, has been incorporated with 500 shares no par value stock to smelt, refine, manufacture and deal in

Bourne-Fuller Service

includes immediate shipment of all Iron and Steel materials from Cleveland and Cincinnati

Warehouses

If you are not receiving our Stock-list we shall be glad to send it to you regularly upon request.

Upson Works

Open Hearth Steel Bars for special uses. Also a complete line of Bolts and Nuts. Prompt Shipments.

THE
BOURNE-FULLER CO.
Iron, Steel
Pig Iron
Coke

CLEVELAND

New York **Chicago**
San Francisco
Cincinnati **Detroit**

metals, alloys and mixtures, by A. Uttal, Bernard M. Epstein and Mark D. Goodman.

CHICAGO—The Diamond Electric Safety Razor Co., 3825 West Jackson boulevard, has been incorporated for $50,000 to manufacture and deal in razors, electrical equipment, etc., by Harry B. Davis, Charles J. Novak and Paul S. Lietz.

CHICAGO—Murray & Servick Motor Co., 130 North Wells street, has been incorporated for $10,000 to manufacture and deal in automobiles, trucks, airplanes and parts, by Thomas H. Murray, John J. Sevick and Edna L. Murray.

CHICAGO—Universal Carrier Co. has been incorporated for $75,000 to do business at 120 North May street, of manufacturing and distributing parts and accessories for pneumatic carrier systems, by B. F. Becker, N. J. Rauen and Charles Schleyer.

CHICAGO—National Copper Roofing Co., 140 South Dearborn street, has been incorporated for $2000 to manufacture and deal in ornamental sheet metal work, roofing materials, etc., by Samuel Berenbaum, Albert N. Jacobson and Philip J. Wolf.

OAK PARK, ILL.—A. L. Wagny, Inc., 52 Madison street, has been incorporated for $50,000 to manufacture and deal in automobiles, parts and accessories, by A. L. Wagny, Walter J. Hoch and John B. Mahoney.

PERU, ILL.—Henkins Motor Co., 1715 Fifth street, has been incorporated for $30,000 to manufacture and deal in motors, automobiles and accessories, by Andrew C. Henkins, Charles H. Bereiter and Walter A. Bradley.

INDIANAPOLIS—The Bronze Piston Ring Co. has been incorporated for $75,000 to manufacture piston rings, by Albert A. Bouvey, Walter J. Six and Austin J. Edwards.

DES MOINES, IOWA—L. Oransky & Sons plans 2-story, 132 x 132-foot shop building, costing about $150,000. L. Oransky, 313 West Walnut street, is president.

MOULTON, IOWA—Wabash railroad plans constructing additions to plant doubling present shop capacity.

KANSAS CITY, KANS.—Construction of a plant is to begin shortly by the Fairfax Iron & Steel Co., soon to be incorporated. Horner & Wyatt, engineer, has been retained to draw plans for new plant, 160 x 600 or 700 feet. Plant will include steel, gray iron and malleable foundries. Company will be capitalized at $1,000,000.

TOPEKA, KANS.—The Western Foundry, 201 Jefferson street, has plans for $60,000 structural plant.

WICHITA, KANS.—The Western Iron & Foundry Co., fabricator of structural steel expects to have plans for expansions completed by middle of 1924. Noted March 20.

BATON ROUGE, LA.—C. C. Mengel Co., Louisville, Ky., has purchased 95 acres of land here from the Aluminum Ore Co. and it is reported plans to engage in manufacturing. The plant will be devoted largely to manufacturing products used in the manufacture of automobile bodies.

BALTIMORE—The Fowler Refrigerating Machine Corp., recently incorporated with a capital of $500,000, is establishing a plant in this city.

BOSTON—An item of $45,000 was added to the naval appropriation bill recently for improvements and additions to the foundry of the Boston navy yard.

NEWTON, MASS.—C. H. Campbell Co., Inc., has been incorporated for $50,000 to manufacture and deal in hardware and machinery, by George C. Campbell, Albert Douglas and Virgil C. Brink, all of Watertown, Mass.

Where additional information is presented, reference is made to date of issue in which previous item appeared.

NEWTON, MASS.—C. H. Campbell Co., Inc., has been incorporated for $50,000 to manufacture hardware and machinery by George C. Campbell, Albert Douglas and Virgil C. Brink, all of Watertown, Mass.

SPRINGFIELD, MASS.—The Martin Fifth Wheel & Trailer Co. has been incorporated with 110,000 shares no par value stock by Charles H. Martin, West Springfield, Mass., Herman C. Heiden and Gertrude M. Nolan.

SLOCUM'S ISLAND, MICH.—Fire recently damaged the 7-story switch house and generator room of the new Channel plant of the Detroit Edison Co. which was under construction near Trenton.

ST. PAUL—Great Northern railroad is asking bids for the construction of a steel coaling station having 500 tons capacity.

NORTH KANSAS CITY, MO.—American Can Co. plans 4-story, 113 x 585-foot brick and concrete plant at Fourteenth and Campbell streets. H. U. Williams is local manager.

NEWARK, N. J.—Charles Ahr Forge Products Co., 75 Schley street, has been incorporated for $500,000 to make drop forgings, metal stampings, etc.

NORTH BERGEN, N. J.—D. & P. Roofing & Tile Co. plans $100,000, 1-story, 30 x 100-foot plant. Owner is taking bids on general contract.

Tool Exports Lower

JANUARY'S domestic exports of lathes and metalworking machinery again showed a decline, the total valuation for that month being $176,603 *as compared with* $177,165 *in December and* $282,929 *in November. Following is a list of exports by countries for January:*

Countries	Lathes	Boring and drilling machine tools	Planes, shapers and slotters	Milling machines
	dollars	dollars	dollars	dollars
Belgium	383	708	...	...
France	2,312	13,227	2,251	...
Italy	...	1,083	...	...
Netherlands	16,616	1,179	1,835	1,913
Spain	...	2,564	...	...
Sweden	8,170	...	...	4,080
England	9,056	273	2,400	405
Canada	100	9,193	...	1,690
Costa Rica	1,518	...	...	...
Guatemala	1,518	...	...	...
Salvador	40	...	...	...
Mexico	1,319	1,139	...	...
Newfoundl'd and Labrador	17	...	...	...
Argentina	...	3,222	...	...
Brazil	575	81	...	...
Chile	2,170	233	...	...
Colombia	5,950	57	...	...
Ecuador	...	...	...	2,030
British India	7,101	...	...	...
Chosen	1,110	...	...	...
Hongkong	...	175	...	...
Japan	14,421	18,855	6,292	20,435
Philippine Isl'ds	...	221	...	...
Australia	4,528	1,618	...	1,519
New Zealand	...	181	...	...
British South Africa	...	821	...	...
Honduras	...	19	...	...
Total	76,904	54,849	12,778	32,072

BROOKLYN, N. Y.—Rein Box Spring Co. has been incorporated for $5000 by M. Rein, H. and C. Friedlander, with S. Leifer, 60 Graham avenue, as attorney.

BROOKLYN, N. Y.—Carl H. Arwee Mfg. Co. has been incorporated for $50,000 to manufacture dies and hardware by C. H. and L. and C. M. Arwe, with W. R. Klein, Floral Park, as attorney.

BROOKLYN, N. Y.—M. Lehman & Sons Co. has been incorporated for $250,000 to manufacture and deal in plumbers' supplies by M. and J. and J. Lehman, with A. J. Smolens, 386 Fifth avenue, as attorney.

NEW YORK—The New York Edison Co. has awarded a $100,000 contract for alterations to its substation at 125 West Fifty-second street, to W. F. Kenny Co.

NEW YORK—Lavenberg Corp. has been incorporated for $50,000 to deal in machinery, by S. P. and G. Lavenberg and D. Simon with A. Lavenberg, 61 Whitehall street, as attorney.

NEW YORK—Frank Bros. Mfg. Co. has been incorporated for $15,000 to manufacture plumbers' supplies, by S. Wagner, L. Frank, with L. A. Jackson, 220 West Forty-second street, as attorney.

NEW YORK—Danko Products Corp. has been incorporated for $100,000 to build machines and manufacture devices, by C. Hyman and H. Sapir, with S. S. Kogan, 299 Broadway, as attorney.

NEW YORK—E. Low & Co. has been incorporated for $10,000 to manufacture surgeons' instruments, by S. T. Stern, M. Bromberg and E. Low, with E. Abraham, 25 West Forty-third street, as attorney.

NEW YORK—Acme Grate Co. has been incorporated for $20,000 to manufacture grates and build boilers by M. and H. B. and J. Goldstein, with M. Sternfeld, 99 Nassau street, as attorney.

CANTON, O.—The Precision Gear Blank Co. has been incorporated for $500 by Raymond J. Bour Jr., George J. Pontius, J. L. Bour and W. L. Gresser.

CINCINNATI—The Welders Supply & Mfg. Co. has been incorporated for $21,000 by Charles A. Miller, Claude E. Freeman, Anna M. Miller, Wilbur L. Root and Ethyl P. Weller.

CLEVELAND—New Method Metal Products Co. has been incorporated for $10,000 by Carl E. Dawson, J. L. Loose, George J. Jones, Gus Norberg, C. J. Danielson and Conrad Carlson.

CLEVELAND—Chicago Pneumatic Tool Co., T. E. Kimman, 1241 East Forthy-ninth street, superintendent, plans 3-story, 44 x 105-foot plant addition. The Austin Co. is engineer; Schirmer O'Hara Co., 2031 Euclid avenue, is general contractor.

COLUMBUS, O.—M. Hertenstein & Co., manufacturer of stoves, was damaged by fire recently. Reconstruction will start at once.

DOVER, O.—The Gripnstick Co., manufacturer of wrenches, has let construction contracts to Gerber Bros. for plant. Production to begin Aug. 1 is to total 400 tools daily. H. N. Bigler is president. *Noted March 20.*

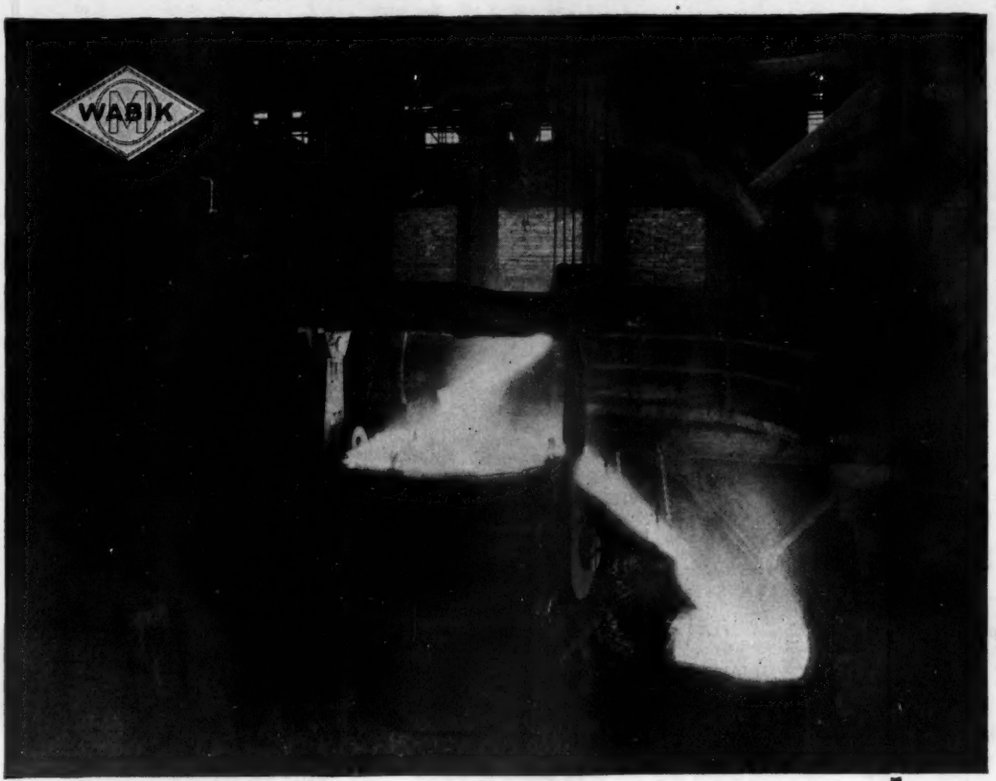
MIDDLETOWN, O.—The Weber Tool, Die & Machine Co. has been incorporated for $100,000 by Arthur J. Weber, Ruscum S. Hicks, Richard C. Dowling, G. W. A. Wilmer and W. H. Johnson.

TOLEDO, O.—Harry Wachter and a syndicate headed by him will construct a $75,000 garage and salesroom.

TOLEDO, O.—Toledo Floor Surfacing Co., A. E. Jacobs, 1021 Blum street, president, plans 2 or 3-story plant, 50 x 150 feet. Mills,

(Concluded on Page 948)

WABIK METAL



"Tapping" an 80 ton heat of "Wabik" metal, showing overflow of slag running into slag box.

WABIK METAL IS
A Special Material, Specially Treated
for
VITREOUS ENAMELING

STOVE DOOR PANELS: SPLASHER BACKS: BROILER PANS: TABLE TOPS: REFRIGERATORS: SIGNS: and other flat work.

WABIK METAL SHEETS, like all other "Mansfield" Products, are rolled from our own "*Bottom-poured*" ingots.

They are very low in sulphur.

Other Specialties:

AUTOMOBILE SHEETS

Body Stock; Flat Fender and Hood Stock; Cowl Stock; Radiator Casing Stock; Crown Fender Stock.

METAL FURNITURE SHEETS
PICKLED and ANNEALED
ENAMELING STOCK
For Kitchen Utensils
MILK CAN STOCK
ELECTRICAL SHEETS

"Mansfield" Steel is the ultimate in Sheet Bars and in Sheets. It means satisfaction to the many users. Constant study of the needs of users, and continuous application of the results of such study, in the way of improved methods in our plants has established a reputation for reliability unsurpassed.

SHEET BARS
INGOTS

MANSFIELD SHEET & TIN PLATE COMPANY
MANSFIELD, OHIO

DISTRICT SALES REPRESENTATIVES

The L. D. Rockwell Co., 1106 National City Bldg., New York, N. Y.
Mansfield Sheet & Tin Plate Co., 1372 Wrigley Bldg., Chicago, Ill.
Mansfield Sheet & Tin Plate Co., 12-237 General Motors Bldg., Detroit, Mich.
The L. D. Rockwell Co., 1512 B. F. Keith Bldg., Cleveland, O.
Wm. L. Hoffman, 1504 West Venango St., Philadelphia, Pa.
Mr. C. H. Beach, 617 Merchants Bank Bldg., Indianapolis, Ind.
Mr. A. P. Grenier, 640 Endicott Bldg., St. Paul, Minn.
Mr. Herbert P. Hill, 401 Continental Trust Bldg., Washington, D. C.
Wm. P. Horn Co., 237 Rialto Bldg., San Francisco, Cal.
Wm. P. Horn Co., 301 Kerchoff Bldg., Los Angeles, Cal.
Wm. P. Horn Co., Dekum Building, Portland, Ore.
Wm. P. Horn Co., 1426 L. C. Smith Bldg., Seattle, Wash.

Iron and Steel Prices

Iron Ore

LAKE SUPERIOR ORES
Per Gross Ton Lower Lake Ports

Old range bessemer, 55 per cent iron.$6.45
Mesabi bessemer, 55 per cent iron.... 6.20
Old Range nonbessemer, 51½ per cent iron 5.70
Mesabi nonbessemer, 51½ per cent iron 5.55

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces
Foundry and basic 53 to 63 per cent ..... 10.00 to 11.00
Copper free low phosphorus 53 to 65 per cent..... 13.25 to 16.50

FOREIGN IRON ORE

Cents per unit, c.i.f. Atlantic ports
Spanish low phosphorus, 52 to 54 per cent..... 9.00 to 10.00
Algerian low phosphorus, 52 to 54 per cent ..... 10.00 to 10.50
Swedish and Norwegian low phosphorus, 68 per cent.... 11.00 to 12.00
Swedish foundry or basic, 66 to 68 per cent ..... 9.25 to 10.00
Spanish foundry or basic, 50 to 54 per cent..... 9.00

Manganese Ore

Prices do not include duty at rate 1 per cent per pound of metallic manganese contained.
Brazilian, minimum 47 per cent.....
....nominal 44 to 46 cents c.i.f. tidewater
Indian, minimum 47 per cent.....
....nominal 44 to 46 cents c.i.f. tidewater
Caucasian, 53 to 55 per cent.....
.....Ordinary, 43 cents c.i.f. tidewater
.....Washed, 46 cents c.i.f. tidewater

Fluor Spar

85 and 5 per cent grade
Washed gravel, Kentucky and Illinois mines, per net ton.$20.00 to 21.00
Washed gravel, imported duty paid eastern tidewater, per gross ton ..... 20.60 to 21.10

Rivets

Structural rivets, C. L. Pitts.. 2.65c to 2.70c
Structural rivets L. C. L. Pitts ..... 2.75c to 2.90c
Rivets, 7/16-in. and smaller.....
.....65, 10 and 5 to 70 and 10 off

Nuts and Bolts

(Up to 1¾ and 1½ inches inclusive)
Hot pressed square or hexagon blank .....$4.25 off list
Hot pressed square or hexagon tapped .....$4.25 off list
Cold punched square or hexagon blank .....$4.00 off list
Cold punched square or hexagon.... .....$4.00 off list
Cold punched semifinished hexagon nuts ⅝-inch and larger.....75 and 5 off
Cold punched semifinished hexagon nuts 9/16-inch and smaller.....80 and 5 off
Price f.o.b. Pittsburgh, packages of 50.

CARRIAGE BOLTS
(¾ x 6 inches, smaller and shorter)

Rolled thread .....60 and 5 off
Cut thread .....50, 10 and 5 off
Larger and longer.....50, 10 and 5 off

MACHINE BOLTS
(⅜ x 4 inches, hot pressed nuts)

Rolled thread .....60, 10 and 5 off
Cut thread .....60 and 5 off
Larger and longer.....60-10 to 60-5 off
(⅜ x 4 inches cold punched nuts)
Cut thread .....50, 5 off
Larger and longer.....50, 5 off
Lag screws .....65 and 5 off
Plow bolts Nos. 1, 2 and 3 heads.. .....50 and 10 off
4 to 10 heads.....50-10 + 20 off
Flat and round head stove bolts..... .....75, 10 and 5 off
Other stove bolts.....75 and 5 off
Tap bolts .....25 and 10 off
Bolt ends with hot pressed nuts..... .....60 and 5 off
Bolt ends with cold punched nuts.... .....50 and 5 off
Blank bolts .....60 and 10 off
Rough stud bolts with nuts..... .....45 and 5 off

Washers

Wrought washers.....$5.25 to $5.50 off

Steel Pipe

(Effective April 19, 1923)
Pittsburgh basing discounts, jobbers' carloads.

	Black	Galvanized
Butt Weld		
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	56	42½
¾-inch	60	48½
1 to 3-inch	62	50½
Lap Weld		
2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½
REAMED AND DRIFTED		
Butt Weld		
1 to 3-inch	60	48½
Lap Weld		
2-inch	53	41½
2½ to 6-inch	57	45½
EXTRA STRONG—PLAIN ENDS		
Butt Weld		
⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½
Lap Weld		
2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	43	31½
DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½
Lap Weld		
2-inch	41	32½
2½ to 4-inch	43	34½
4½ to 6-inch	42	33½
7 to 8-inch	38	25½

Wrought Iron Pipe

(Effective Jan. 23, 1923)
Pittsburgh basing discounts, jobbers' carloads

THREADS AND COUPLINGS		
Butt Weld		
¼ and ⅜-inch	+11	+39
½-inch	22	2
¾-inch	28	11
1 to 1½-inch	30	13
Lap Weld		
1¼ and 1½-inch	Upon application	
2-inch	23	7
2½ to 6-inch	26	11
7 to 8-inch	28	13
7 to 12-inch	26	11
PLUGGED AND REAMED		
Two points less than above		
EXTRA STRONG, PLAIN ENDS		
Butt Weld		
¼ and ⅜-inch	+19	+54
½-inch	21	7
¾-inch	28	12
1 to 1½-inch	30	14
Lap Weld		
2-inch	23	9
2½ to 4-inch	29	15
4½ to 6-inch	28	14
7 to 8-inch	21	7
9 to 12-inch	16	2
DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39
Lap Weld		
2 and 2½ inches	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	

Boiler Tubes

L. C. L. discounts. C. L. 4 points larger

STEEL (Lap Welded)
(Effective April 19, 1923)

2 and 2¼-inch ..... 23 off
2½ and 2¾-inch ..... 33 off
3-inch ..... 36 off
3¼ to 3¾-inch .....38½ off
4 to 13-inch ..... 42 off

CHARCOAL IRON
(Effective April 12, 1923)

1½-inch ..... +22
1¾-inch ..... +12
2 and 2¼-inch ..... + 2
2½ to 3-inch 3
3¼ to 4½-inch..... 5

SEAMLESS COLD DRAWN
(Effective April 19, 1923)

1-inch ..... 51 off
1¼ and 1½-inch ..... 43 off
1¾-inch ..... 27 off
2 and 2¼-inch ..... 18 off
2½ and 2¾-inch..... 28 off
3 and 3¼-inch ..... 32 off
3½ and 3¾-inch ..... 33 off
4-inch ..... 37 off
4½ and 5-inch..... 29 off

SEAMLESS HOT ROLLED

3 and 3¼-inch ..... 34 off
3½ and 3¾-inch..... 35 off
4-inch ..... 39 off

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:
Add $8 per net ton for more than four gages heavier than standard and add 10 per cent to theoretical weight.
Add 5 per cent for lengths over 24 feet and not over 26 feet.
Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.
Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING
Base Discounts

Carbon, 0.10 to 0.20 per cent..... 83 off
Carbon, 0.30 to 0.40 per cent..... 81 off
Carbon 0.40 to 0.50 per cent.....net price
Plus differentials and extras for cutting.

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES
(Effective April 19, 1923)

Outside diameter	Net prices per foot f.o.b. Pittsburgh Gage	Price
2-inch	12-gage	15c
2-inch	12-gage	15c
2-inch	11-gage	16c
2-inch	10-gage	17c
2¼-inch	12-gage	17c
2¼-inch	11-gage	18c
2¼-inch	10-gage	20c
3-inch	7-gage	35c
1½-inch	9-gage	15c
5⅜-inch	9-gage	55c
5½-inch	9-gage	57c

Plus usual extras for forming and for long lengths.

Hot Rolled Alloy Steels

Prices per pound, Pittsburgh

S. A. E. Series—
2300 (3½ per cent nickel)... 5.00c
3100 (nickel chromium)..... 4.25c
6100 (chrome vanadium)..... 5.00c
5100 (chrome vanadium spring) 4.75c
9250 (silico manganese spring) 4.00c to 4.25c

Sivyer castings can be forged and welded

SIVYER CASTINGS

DEPENDABLE

A swing bolster for a gasoline-driven motor-coach. Cast in Sivyer Electric Steel.

Withstanding a 50 Ton Test Without Cracking

THIS casting, with its cored recesses and varying thin sections, presents an intricate molding problem. When the Sivyer Steel Casting Company undertook the job the piece had been giving trouble. The unequal cooling shrinkage in the varying thin sections caused cracks and strains. Light weight could not be sacrificed, so a slight change in the design of the side walls was recommended. The redesigned Sivyer Castings successfully withstand a 50 ton test in a hydraulic press. In this case, as in so many other cases, the superior Sivyer foundry practice has benefited the Sivyer Castings user by providing stronger more durable parts.

Send Blue Prints

The casting shown above is a swing bolster of a railway motor-coach. In this service, it is called upon to carry about one-half the total weight of the coach. Yet, lightness is a necessary feature of the bolster itself.

Through Sivyer design and Sivyer Electric Steel the qualities of light weight and strength have both been retained.

If you are faced with similar castings problems send us blue prints of the part with a statement of your difficulties. We will be glad to study the problems involved and to recommend possible solutions without obligation on your part.

SIVYER STEEL

SIVYER STEEL CASTING COMPANY, MILWAUKEE

Construction and Enterprise

(*Concluded from Page* 944)

Rhines, Bellman & Nordhoff is architect.

WOOSTER, O.—The Wooster Tool & Supply Co. has been incorporated for $25,000 by George W. Quinby, Jacob L. Eckstein, Rhea Cahoon, Walter A. Locker and John J. Klise.

YOUNGSTOWN, O.—The American Sheet & Tin Plate Co. has awarded contracts to the Mesta Machine Co. for building a stationary engine and four sheet mills at the local plant.

HARRISBURG, PA.—Air Reduction Sales Corp. is taking bids on $60,000, 1-story, brick and steel plant. E. C. Turner, 342 Madison avenue, New York, is chief engineer.

OIL CITY, PA.—Keystone Machine & Engineering Co. plant here was damaged by fire March 22. Loss was estimated at $50,000.

PHILADELPHIA—Globe Metal Mfg. Co. plans 3 story, 32 x 110-foot brick and steel plant at 2620 Martha street. G. Lipschutz, 2122 East Hazzard street, is interested.

PHILADELPHIA—Work will be started shortly on a machine shop by Glass Bros., Third and Sedgley streets. George Good, Adams road, has been awarded the general contract.

PHILADELPHIA—Joseph Kopperman & Sons has let contracts for $25,000 plant, 33 x 82 feet, at 324-8 New street, to Clayton Lofland, 224 North Water street. Kopperman company operates coppersmith shops.

PROVIDENCE, R. I.—Shawmut Motors, Inc., has been incorporated for $100,000 by Philip C. Joslin, Ira Marcus and John A. Bennett.

DALLAS, TEX.—Conservation of water power program here will involve a $5,000,000 reservoir with necessary equipment.

ELECTRA, TEX.—The United States Machine Shop was damaged by fire recently, partly covered by insurance.

FORT WORTH, TEX.—The Lone Star Tank Co., Wichita Falls, plans car repair shop along Santa Fe tracks here, at cost of about $75,000.

ABERDEEN, WASH.—Grays Harbor Railway & Light Co. has adopted an improvement program in 1924 to involve expenditure of $500,000.

HILLYARD, WASH.—Great Northern railway will construct a 72-stall roundhouse this summer.

CLINTONVILLE, WIS.—Hauskins Carburetor Co. has been incorporated for $100,000 to manufacture a new type of carbureting device for gasoline engines, by Alvin J. Hauskins, Robert Miller, Raymond and William Madel and Dr. J. W. Devine.

Business in Canada

BRINSTON, ONT.—H. B. Cook is in the market for a drill press and lathe.

CARDINAL, ONT.—G. Raycroft is in the market for a drill press and lathe.

MANOTICK, ONT.—J. Patterson is in the market for a drill press and grinder.

ORILLIA, ONT.—Tudhorpe-Anderson Co. proposes to install electric spot welding and stove top polishing machines. Prices on this and other equipment are being received by F. Hindle, superintendent.

OSGOODE STATION, ONT.—J. E. Saunders is asking for bench drill, forge with hood, blower, etc.

OTTAWA, ONT.—Ottawa Hydro Electric commission, 75 Laurier avenue, is in the market for transformers, meters, wire and general electic supplies.

PERTH, ONT.—James Bros. is asking for prices on molding machines, ladles, lathes and other equipment for foundry addition.

SCHREIBER, ONT.—The Canadian Pacific railway will take bids soon for erection of engine house to cost $150,000 to replace one recently damaged by fire.

CAP DE LA MADELEINE, QUE.—The St. Maurice Paper Co. has started construction work on a machine shop here to cost $500,000. Machinery and tools will be purchased for the plant.

New Trade Publications

CASTINGS—Wm. J. Sweet Foundry Co., Inc., Philadelphia, has issued a pamphlet describing castings of monel metal and pure nickel. The various applications of these castings are listed.

INDUCTION MOTORS—The Century Electric Co., St. Louis, has issued a leaflet describing its polyphase squirrel cage induction motors, giving specifications and details of construction.

ALUMINUM FURNACES—Stationary and tilting aluminum furnaces burning either gas or oil are described and illustrated in a 4-page folder issued by the F. A. Coleman Co., Cleveland, O. The capacities of the furnaces are given and melting data are given.

BLOWERS—The American Blower Co., Detroit, has issued a pamphlet describing a new apparatus for heating industrial buildings, warehouses, foundries, etc. Drawings are presented, showing installations of a single unit or several units in one plant.

PICKLING SOLUTION—Pickling of steel by the use of a compound which it manufactures is described in a bulletin recently issued by the American Chemical Paint Co., Ambler, Pa. Testing of pickling baths and control by the compounds also are discussed.

REFRACTORY MATERIAL—A highly refractory ganister for repairing industrial furnaces and making refractory tile and special shapes is described in a pamphlet sent out by the Quigley Furnace Specialties Co., Inc., New York. The pamphlet is well illustrated.

LOADERS—A machine for loading loose materials such as sand, gravel, broken stone, coal, etc., is described in an 8-page booklet published by the N. P. Nelson Iron Works, Inc., Brooklyn, N. Y. This loader is mounted on a tractor manufactured by the Ford Motor Co.

HELICAL TUBE RECORDERS—Recording, controlling and indicating instruments employing a helical tube to actuate the pen arm are described in a bulletin by the Foxboro Co., Inc., Foxboro, Mass. This is claimed by the makers to be a new principle that eliminates defects in continued operation.

FORGINGS—The Vulcan Steam Forging Co., Buffalo, N. Y., has issued a 28-page handbook on properties and applications of forgings. Much information, including specifications, etc., is presented. A wide variety of forgings is shown in illustrations in the booklet.

GRINDERS—Swinging frame grinding and polishing machines are described in a pamphlet published by the Excelsior Tool & Machine Co., East St. Louis, Ill. The device is entirely self contained, either belt or motor driven, and is adaptable to foundry operations.

PROTECTIVE COATINGS—An emulsion of asphalt and water to be applied cold to steel and concrete surfaces as a protection against acid gases, fumes, brine drip and corrosion is described in a 4-page leaflet by Gardiner & Lewis, Inc., New York and Chicago. Properties of the material, various applications and methods of its use are given.

PIPE CUTTERS—Three new sizes of pipe cutters added to the line of the Borden Co., Warren, O., are described in a bulletin published by that company. The machines operate on the same principle as other cutters made by this company, but the application is different, allowing large sizes to be cut by hand, or by power if desired.

PORTABLE POWER PIPE MACHINE—The Williams Tool Corp., Erie, Pa., has issued an attractive catalog devoted to its new small portable power pipe threading machine. The booklet contains 32 pages, is well illustrated and deals in an interesting manner with the portability and utility of this machine for cutting, threading and otherwise preparing pipe for use.

HEAT ENDURING CASTINGS—The Calorizing Co., Pittsburgh, in a handsome catalog of 20 pages describes castings produced by its procses for use in high temperatures for retorts, annealing boxes, heat treating boxes, furnace parts and similar uses. Illustrations of various installations, a heat-color chart and conversion table of Fahrenheit and Centigrade scales completes the book.

AUTOMATIC TEMPERATURE CONTROL—F. J. Ryan & Co., Wesley building, Philadelphia, present an 8-page booklet describing control of temperature in gas and oil-fired furnaces and the necessity of such control in industry. In this small compass full discussion is not attempted but the subject is covered sufficiently to indicate its value and the efficiency of the methods employed. A valve group operated by a solenoid accomplish the desired result.

POWER PLANT LUBRICATION—Extensive consideration of the proper lubrication of power plant machinery is presented in a 60-page book just issued by the Tide Water Oil Sales Corp., New York. Discussion of the operation of equipment is kept at a minimum and stress is placed on proper lubrication. Beginning with definitions of friction and lubrication the book carries the reader through various types of bearings and lubricants and the sevefal methods of applying the latter. Text and illustrations are clear and throw much light on the points described.

STATIC CONDENSERS—That power factor correction is an important feature in utilizing electric current from central stations is emphasized in a circular recently issued by the Westinghouse Electric & Mfg. Co., Pittsburgh. Need for correction and means to obtain a high power factor are discussed and the method of selecting the proper corrective device is analyzed. A static condenser is described and wiring diagrams are presented. Calculation of the corrective kilovolt-ampere, a chart for determining the per cent of reactive kilovolt-amperes required to raise the power factor to the desired value and various tables complete the book.

Can *You* Use This Building?

It is yours in 30 working days

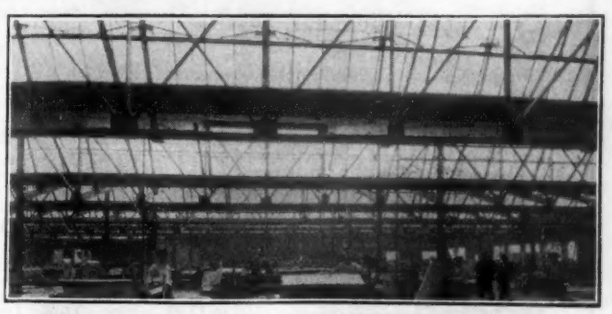
DO you need more floor space? Are your plans blocked by lack of room? Then think of this!

In thirty working days the H. K. Ferguson Co., can set down in your plant a permanent building of concrete, brick and steel. This one organization will assume the entire responsibility, from plans to finished structure.

You pay no premium for this speed. Quality is never sacrificed. Ferguson buildings are *guaranteed* in design, in quality, in cost and delivery date. Firms like Procter & Gamble and General Electric Co., have bought Ferguson buildings repeatedly, and moved in on the contract date. They know that the Ferguson organization comes through without delay—without alibis, or argument.

You can have the same service—and as fine a building. And you can have it now. Come, call us up, or telegraph, if *you* are in a hurry. Or write for booklet "F."

Interior of the General Electric Company's plant at Decatur, Ind. A Ferguson speed job, erected in the dead of winter. All the steel for this building (250 x 250) was shipped from stock.



Part of a 250' x 400' building erected in record time by the Ferguson Company for the Kennedy Carliner & Bag Co. of Shelbyville, Ind. Speed was essential, since the original building had been destroyed by fire.

THE H. K. FERGUSON COMPANY

Cleveland Office: 4900 Euclid Building :: Telephone, Randolph 6854
New York Office: 25 West 43rd Street :: Telephone Vanderbilt 4526

Ferguson

GUARANTEED BUILDINGS

Iron and Steel Scrap Prices

CORRECTED TO TUESDAY NOON GROSS TONS DELIVERED TO CONSUMER

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	**14.00 to 15.00**
Boston (dealers)	11.50 to 12.00
Buffalo	17.50 to 18.00
Chicago	15.50 to 16.00
Cleveland	16.25 to 16.50
Cincinnati	13.50 to 14.00
Detroit (dealers)	14.50 to 15.00
Eastern Pennsylvania	16.00 to 16.50
New York (dealers)	12.00 to 12.50
Pittsburgh	18.00
St. Louis	15.25 to 15.75
Valleys	17.00 to 17.50
No. 1 railroad steel New York (dealers)	12.50 to 13.00

COMPRESSED SHEETS

Buffalo	16.00 to 16.50
Chicago	13.00 to 13.50
Cleveland	13.50 to 13.75
Detroit (Dealers)	12.00 to 12.50
Pittsburgh	16.50 to 17.00
Valley	16.50 to 16.75

BUNDLED SHEETS

Buffalo	12.50 to 13.00
Cincinnati	10.00 to 10.50
Cleveland	10.50 to 11.00
Detroit	10.50 to 11.00
Eastern Pennsylvania	14.00 to 14.50
Pittsburgh	15.25 to 15.75
St. Louis	10.00 to 10.50
Valleys	14.00 to 14.25

SHEET CLIPPINGS, LOOSE

Chicago	11.00 to 11.50
Detroit	9.50 to 10.00

STEEL RAILS, SHORT

Birmingham	12.00 to 12.50
Boston (dealers)	**12.00 to 12.50**
Chicago	19.00 to 19.50
Cincinnati	17.50 to 18.00
Cleveland (over 6 ft.)	15.00 to 15.50
St. Louis	19.50 to 20.00

STOVE PLATE

Birmingham	15.50 to 16.00
Boston (consumers)	**16.00 to 16.50**
Buffalo	16.50 to 17.00
Chicago	18.00 to 18.50
Cincinnati (net tons)	10.00 to 10.50
Cleveland	14.75 to 15.50
Detroit (net ton) (dealers)	14.50 to 15.00
Eastern Pennsylvania	15.50 to 16.00
New York (dealers)	13.00 to 13.50
Pittsburgh	14.50 to 15.00
St. Louis	17.75 to 18.25

LOW PHOSPHORUS

Buffalo	20.00 to 21.00
Cincinnati	14.00 to 14.50
Eastern Pennsylvania	22.00 to 23.00
Pitts., billet and bloom crops	22.50 to 23.00

SHOVELING STEEL

Chicago	15.00 to 15.50
Pittsburgh	15.00 to 15.50
St. Louis	15.25 to 15.75

KNUCKLES, COUPLERS, SPRINGS

Chicago	19.00 to 19.50
Eastern Pennsylvania	20.50 to 21.50
Pittsburgh	20.00 to 20.50
St. Louis	20.00 to 20.50

FROGS, SWITCHES, GUARDS

Chicago	15.50 to 16.00
Eastern Pennsylvania	16.00 to 16.50
St. Louis	16.75 to 17.25

BOILER PLATE, CUT

St. Louis	9.50 to 10.00

ANGLE BARS—STEEL

Chicago	17.50 to 18.00
St. Louis	17.75 to 18.25

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	**12.00 to 13.00**
Boston (dealers)	**13.50 to 14.00**
Buffalo	15.00 to 16.00
Cleveland, No. 1	12.50 to 12.75
Chicago, No. 1	15.25 to 15.75
Chicago, No. 2	15.50 to 16.00
Cincinnati, No. 1	11.00 to 11.50
Detroit, No. 2	14.50 to 15.00
Eastern Pennsylvania	18.00 to 19.00
New York, No. 1 (dealers)	**15.00 to 16.00**
Pittsburgh, No. 1	16.00 to 16.50
Pittsburgh, No. 2	18.00
St. Louis, No. 1	15.00 to 15.50
St. Louis, No. 2	15.25 to 15.75

WROUGHT PIPE

Boston (dealers)	10.00 to 10.50
Buffalo	12.00 to 13.00
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	**10.50 to 11.00**

YARD WROUGHT

Boston	12.00 to 12.50
Eastern Pennsylvania	16.00 to 17.00

CITY WROUGHT

New York, long	**15.00 to 15.50**

BUSHELING

Buffalo	16.00 to 16.50
Chicago, No. 1	13.50 to 14.00
Chicago, No. 2	9.75 to 10.25
Cincinnati, No. 1	10.00 to 10.50
Cleveland, No. 1	11.00 to 11.25
Cleveland, No. 2	10.00 to 10.25
Detroit, No. 1	11.50 to 12.00
Detroit, No. 2 (new)	12.00 to 12.50
Detroit, No. 2 (old)	**9.50 to 10.00**
Eastern Pennsylvania	15.50 to 16.00
Pittsburgh, No. 1	15.00 to 15.50
St. Louis, No. 1	15.00 to 15.50

MACHINE SHOP TURNINGS

Birmingham	8.00 to 9.00
Boston (dealers)	9.50 to 10.00
Buffalo	11.50 to 12.00
Chicago	9.50 to 10.00
Cincinnati	9.00 to 9.50
Cleveland	11.75 to 12.00
Detroit (dealers)	9.50 to 10.00
Eastern Pennsylvania	14.00 to 14.50
New York (dealers)	10.75 to 11.25
Pittsburgh	14.50 to 15.00
St. Louis	9.50 to 10.00
Valleys	11.75 to 13.00

CAST IRON BORINGS

Birmingham (chemical)	**15.00 to 16.00**
Birmingham (plain)	**9.00 to 10.00**
Boston (chemical	11.50 to 12.00
Boston (dealers)	10.00 to 10.50
Buffalo	13.00 to 13.50
Chicago	13.00 to 13.50
Cincinnati	10.00 to 10.50
Cleveland	12.50 to 12.75
Detroit (dealers)	10.00 to 10.50
Eastern Pennsylvania (chem.)	16.50 to 17.50
Eastern Pennsylvania	14.50 to 15.00
New York (dealers' price)	10.75 to 11.25
Pittsburgh	15.00 to 15.50
St. Louis	11.50 to 12.00
Valleys	13.75 to 14.00

MIXED BORINGS AND TURNINGS
For blast furnace use

Boston (dealers)	9.50 to 10.00
Cleveland	12.00 to 12.25
Detroit (dealers)	10.00 to 10.50
Eastern Pennsylvania	14.00 to 14.50
New York (dealers)	10.75 to 11.25

IRON AXLES

Birmingham	21.00 to 21.50
Boston (consumers)	**31.00 to 32.00**
Buffalo	26.00
Chicago	29.50 to 30.00
Cincinnati	21.00 to 21.50
Easetrn Pennsylvania	24.00 to 26.00
New York (dealers)	**25.75 to 26.25**
St. Louis	30.00 to 30.50

IRON RAILS

Buffalo	19.00 to 20.00
Chicago	19.00 to 19.50
Cincinnati	13.00 to 13.50
St. Louis	15.00 to 15.50

PIPES AND FLUES

Chicago	10.50 to 11.00
Cincinnati	9.00 to 9.50
Cleveland	9.50 to 9.75
St. Louis	11.00 to 11.50

RAILROAD GRATE BARS

Buffalo	16.00 to 16.50
Chicago	17.00 to 17.50
Cleveland	14.75 to 15.00
Eastern Pennsylvania	16.00 to 16.50
New York (dealers)	13.50 to 14.00
St. Louis	17.50 to 18.00

FORGE FLASHINGS

Boston (dealers)	10.50 to 11.00
Chicago, small	12.00 to 12.50
Cleveland (under 10 in.)	10.75 to 11.00
Cleveland (over 10 in.)	10.00 to 10.25
Detroit (dealers)	10.50 to 11.00

FORGE SCRAP

Boston (dealers)	**10.50 to 11.00**
Chicago	19.00 to 19.50
Eastern Pennsylvania	14.50 to 15.00

ARCH BARS AND TRANSOMS

Chicago	20.00 to 20.50
St. Louis	22.50 to 23.00

ANGLE BARS—IRON

Chicago	19.50 to 20.00
St. Louis	22.50 to 23.00

Iron and Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	11.00 to 11.50
Buffalo	**15.00 to 15.50**
Chicago	14.00 to 14.50
Cleveland	14.25 to 14.75
Eastern Pennsylvania	15.00 to 16.00
Pittsburgh	17.00 to 17.50
St. Louis	**14.00 to 14.50**

STEEL CAR AXLES

Birmingham	**19.00 to 20.00**
Boston (consumers)	**20.00 to 21.00**
Buffalo	19.00 to 20.00
Chicago	20.50 to 21.00
Cleveland	19.00 to 19.25
Eastern Pennsylvania	21.00 to 22.00
Pittsburgh	20.50 to 21.00
St. Louis	21.50 to 22.00

SHAFTING

Boston (consumers)	**21.00 to 22.00**
Chicago	21.00 to 21.50
Eastern Pennsylvania	**21.00 to 23.00**
New York (dealers)	18.50 to 19.00
St. Louis	22.00 to 22.50

Iron Foundry Scrap

CAR WHEELS

Birmingham, tram car	**17.00 to 18.00**
Birmingham, iron	**16.00 to 17.00**
Boston (consumers)6	**20.00 to 20.50**
Buffalo	19.00 to 19.50
Chicago, iron	18.00 to 18.50
Cincinnati	12.50 to 13.00
Eastern Pennsylvania	18.00 to 19.00
New York iron (dealers)	**15.75 to 16.25**
Pittsburgh, iron	19.50 to 20.00
Pittsburgh, steel	20.00 to 20.50
St. Louis, iron	19.00 to 19.50

NO. 1 CAST SCRAP

Birmingham, cupola	**20.00 to 21.00**
Boston (consumers)	22.00 to 22.50
Buffalo	19.00 to 19.50
Chicago, cupola	20.50 to 21.00
Cincinnati No. 1 machinery cupola (net tons)	17.50 to 18.00
Cleveland, cupola	20.50 to 21.00
Detroit (net tons) (dealers)	17.00 to 17.50
Eastern Pennsylvania, cupola	**19.00 to 20.00**
New York, cupola (dealers)	**16.50 to 17.00**
Pittsburgh, cupola	19.50 to 20.00
San Francisco	**25.00 to 26.00**
St. Louis, railroad	21.50 to 22.00
St. Louis, agricultural	21.00 to 21.50
Valleys	20.00 to 20.50

HEAVY CAST

Boston (consumers)	**19.00 to 19.50**
Buffalo (breakable)	15.50 to 16.00
Cleveland	12.50 to 13.00
Detroit (automobile) (net ton)	**23.50 to 24.00**
Eastern Pennsylvania	16.50 to 17.50
New York (dealers)	**15.50 to 17.00**
Pittsburgh	17.50 to 18.00

MALLEABLE

Boston (railroad)	**19.00 to 20.00**
Buffalo	21.00 to 21.50
Chicago, railroad	20.50 to 21.00
Chicago, agricultural	19.25 to 20.25
Cincinnati, agricultural	13.50 to 14.00
Cincinnati, railroad	18.00 to 18.50
Cleveland, agricultural	18.00 to 18.25
Cleveland, railroad	18.25 to 18.50
Detroit (dealers)	**18.00 to 18.50**
Eastern Pennsylvania, railroad	**17.00 to 18.00**
Pittsburgh, railroad	18.00 to 18.50
St. Louis, agricultural	17.00 to 17.50
St. Louis, railroad	17.50 to 18.00

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	**17.00 to 17.50**
Boston (dealers)	14.00 to 14.50
Chicago	17.75 to 18.25
Cleveland	17.00 to 17.25
Detroit	15.00 to 15.50
Eastern Pennsylvania	**19.00 to 20.00**
New York (dealers)	16.50 to 17.00
Pittsburgh district	21.00 to 21.50
St. Louis	17.00 to 17.50

LOCOMOTIVE TIRES

Chicago	17.50 to 18.50
St. Louis	16.75 to 17.25

LOW PHOSPHORUS PUNCHINGS

Chicago	17.50 to 18.00
Eastern Pennsylvania	21.00 to 22.00
Pittsburgh	21.00 to 21.50